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M.Y. ERGASHOV

**ORGANIK KIMYODAN MASALA,
MASHQ VA TESTLAR**



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**O'ZBEKISTON RESPUBLIKASI OLIY VA O'RTA MAXSUS
TA'LIM VAZIRLIGI**

M.Y. ERGASHOV

**ORGANIK KIMYODAN MASALA,
MASHQ VA TESTLAR**

Professor R.A. Shoymardonov umumiy tahriri ostida

Oliy ta'lim muassasalarining kimyo ta'lim yo'nalishi talabalari uchun
o'quv qo'llanma sifatida tavsiya etilgan

**“Durdona” nashriyoti
Buxoro - 2021**

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KBK 24.239я7

Taqrizchilar:

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kafedrası dotsenti, PhD., dotsent.

**O'zbekiston Respublikasi Oliy va o'rta maxsus ta'lim
vazirligining 2021-yil 31-maydagi 237-sonli buyrug'iga asosan
nashr etishga ruxsat berilgan.**

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SO‘Z BOSHI

Organik kimyo fanidan masala, mashq va testlar yechish talabalarining nazariy bilimini chuqurlashtiradi va ularni adabiyot ustida mustaqil ishlashga o‘rgatadi.

Oliy o‘quv yurtlariga kirish sinovlarining test usulida o‘tkazilishi qobiliyatli yoshlarni o‘qishga qabul qilish, haqiqatni qaror toptirish imkoniyatin yaratdi. Test oliy o‘quv yurtlari talabalarining bilimni reyting tizimida nazorat qilish va baholashda ham keng qo‘llanilmoqda. Lekin organik kimyodan namunaviy o‘quv dasturi talabiga javob beradigan masala, mashq va ayniqsa testlarning yetarli emasligi o‘quv jarayoni samaradorligini oshirish, reyting nazoratlarini xolisona o‘tkazishda qiyinchilik tug‘dirmoqda. Ushbu o‘quv qo‘llanma shu qiyinchilikni muayyan darajada bartaraf qilish maqsadida universitetlarning “Kimyo” ta‘lim yo‘nalishi talabalariga mo‘ljallab tuzildi. Muallif kitobni yozishda O‘zbekiston Respublikasi. Rossiya hamda chet elda nashr qilingan, shuningdek. Buxoro davlat universiteti organik va fizkolloid kimyo kafedrasida professor-o‘qituvchilari tomonidan yaratilgan adabiyotlar (kitob oxiridagi adabiyotlar ro‘yxatiga qarang)dagi materiallardan ijodiy foydalandi.

Kitobda organik birikmalarning nomlanishi, izomeriyasi, olinishi, xossalari UB-, IQ-, YaMR ^1H -spektroskopiyalari va mass-spektrometriyasi, ko‘p bosqichli sintezlar hamda hisoblashga oid masala, mashq va testlar ... boblarga bo‘lib berilgan. Bob oxirida nisbatan qiyin masala, mashq va testlarning to‘g‘ri javoblari keltirilgan.

Masala, mashq va testlarni tushunib yechish va ularning bob oxirida keltirilgan to‘g‘ri javoblari bilan taqqoslash maqsadida tegishli adabiyotlarga havola berilgan. Havoladan foydalanish tartibi quyidagicha: masalan 8, 205-b deb yozilgan bo‘lsin. Bunda 8 mazkur qo‘llanma oxirida keltirilgan adabiyotlar ro‘yhatidagi foydalanishi lozim bo‘lgan ayni adabiyot (Shoymardonov R.A., Abduraxmonov S.F. Organik kimyodan testlar. To‘ldirilgan va qayta ishlangan 2-nashri. 2012 yil). 205-b esa uning 205 beti demakdir.

Kitobdagi testlar Buxoro davlat universiteti kimyo ta‘lim yo‘nalishi talabalarining bilimni nazorat qiliash va baholashda sinab ko‘rilgan va ushbu natijaga erishgan.



Qo'llanma qo'lyozmasi bilan tanishib qimmatli fikr-mulohazalarini bildirganliklari uchun Buxoro davlat universiteti organik va fizkolloid kimyo kafedrasi professori, kimyo fanlari doktori B.B. Umarovga, dotsent H.T. Avezovga, katta o'qituvchi S.F.Abduraxmonovga, kimyo fanlari bo'yicha falsafa doktori, dotsent M.A. Tursunovga minnardorchilik bildiramiz.

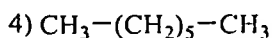
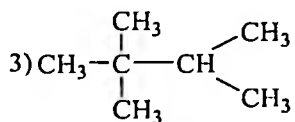
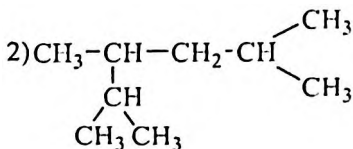
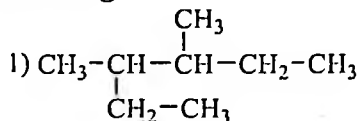
O'quv qo'llanma va uni takomillashtirish haqidagi kitobxonlarning fikr va mulohazalari mamnuniyat bilan qabul qilinadi.

Muallif

I BOB. ALKANLAR

Alkanlarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalariga oid masala va mashqlar

1. Quyidagi uglevodorodlarni IUPAC nomenklaturasi bo'yicha nomlang:



2. Quyida berilgan uglevodorodlarni tuzilish formulalarini yozing:

- 2,4-dimetil-3-izopropilpentan;
- 4-izopropil-4-uchlamchi-butildekan;
- 3,8-dietil-5-ikkilamchi-butildekan;
- 2,2,4,4-tetrametil-3,3-di-uchlamchi-butilpentan.

3. C_3H_6 , C_4H_8 , C_6H_6 , C_6H_{14} , C_{10}H_8 , $\text{C}_{11}\text{H}_{24}$, $\text{C}_{14}\text{H}_{28}$, $\text{C}_{15}\text{H}_{32}$ uglevodorodlarning qaysilari to'yingan?

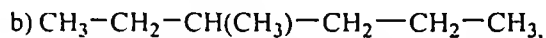
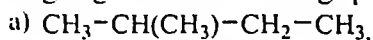
4. Etan, propan, n-butan va izobutanning elektron formulalarini yozing.

5. Pentan va geksanning barcha izomerlari tuzilish formulalarini yozing va ratsional hamda sistematik nomenklaturaga ko'ra nomlang.

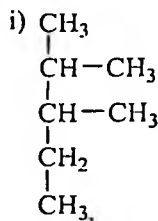
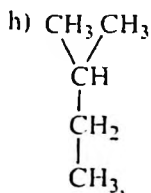
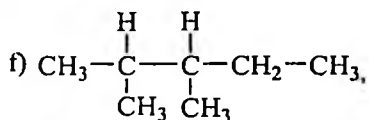
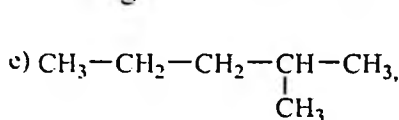
6. n-septanning barcha izomerlari tuzilish formulalarini yozing va ularni ratsional hamda sistematik nomenklaturaga binoan nomlang. Har bir izomerdagi birlamchi, ikkilamchi, uchlamchi hamda to'rtlamchi uglerod atomlari sonini ko'rsating.

7. Oktanning bir vaqtning o'zida birlamchi, ikkilamchi, uchlamchi va to'rtlamchi uglerod atomlarini tutgan izomerlarining tuzilish formulalarini yozing. Ularni ratsional va sistematik nomenklatura bo'yicha nomlang.

8. Quyidagi uglevodorodlarning qaysilari bir biriga o'xshashligini

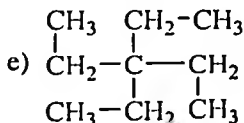
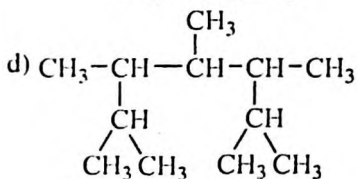
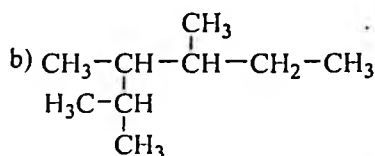
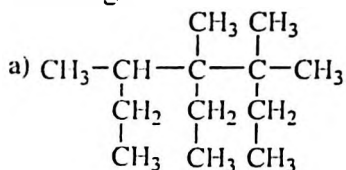


ko'rsating: d) $\text{CH}_3\text{-CH}(\text{CH}_3)\text{-CH}(\text{CH}_3)\text{-CH}_2\text{-CH}_3$,



9. a) metil radikali hamda b) metan, etan, propan molekularining fazoviy tuzilishi qanday?

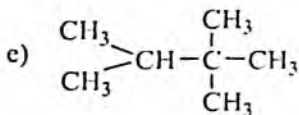
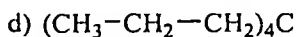
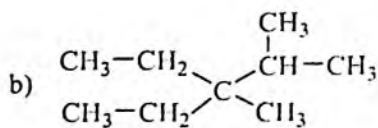
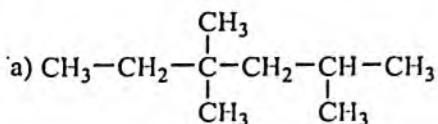
10. Quyidagi uglevodorodlarni sistematik nomenklaturaga binoan nomlang:



11. Etan va 1,2-dixloretanning to'silgan va tormozlangan konformatsiyalarini perspektiv formulalar va Nyumen proyeksiyalari ko'rinishida tasvirlang. To'silgan va tormozlangan konformatsiyalar (konformerlar) ni nega ajratib olib bo'lmaydi?

12. Butan ikkita barqaror konformatsion (gosh va anti-) izomerga ega. Shu konformerlarni Nyumen proyeksiyalari ko'rinishida tasvirlang.

13. Quyidagi uglevodorodlarni rotsional va sistematik nomenklatura bo'yicha nomlang:



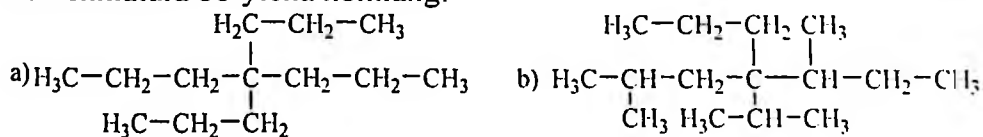
14. C_4H_9 , C_5H_{11} va C_6H_{13} radikallar izomerlarining tuzilish formulalarini yozing va sistematik nomenklatura bo'yicha nomlang.

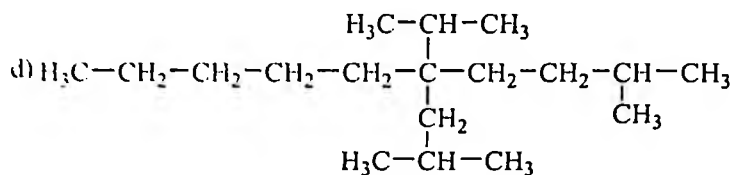
15. Quyidagi moddalar to'g'ri nomlanganmi: a) 3-propilgeptan b) 2-metil-3-etilbutan, d) 4-bitil-4-izobutilnonan, e) 4-izopropil-5-butildekan, f) 3,4-dimetilpentan, g) 4-izobutil-5-uchlamchi-butiloktan, h) 3-metil-5-izobutildekan i) 3etil-4-propiloktan. Noto'g'ri nomlanganlarini tuzating.

16. Quyidagi uglevodorodlarning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang: a) metiletilpropilizobutilmetan, b) metildietilmetan, d) dimetilpropilbutilmetan, e) trimetilizobutilmetan, f) dipropildiizopropilmetan, g) diizobutildiikkilamchibutilmetan, h) etilizopropilizobutilmetan, i) α,α -diizo-propil- β,β -diizobutiletan j) geksaizopropiletan.

17. Quyidagi uglevodorodlarning tuzilish formulalarini yozing: a) 4-metil-5-izopropildekan, b) 4,6-diizopropilnonan, d) 3,3-dimetil-4-etil-6-uchlamchibutil-8-neopentildodekan, e) 2,3,3,8,9-pentametil-5,5-diizobutil-6-(1,1-dimetilpropil) undekan, d) 2,4,5,6-tetrametil-6-(2-metilbutil)-tridekan, e) 8-(1-metilpentil)-10-(2-metilpentil)-septadekan, f) 8-(1,2-dime-tilpentil)-6-izobutilpentadekan, g) 6,6,8,8-tetrakis-(1-eto-butil)-trndekan.

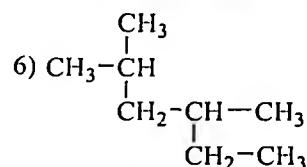
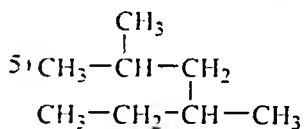
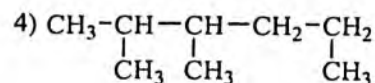
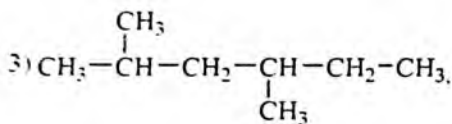
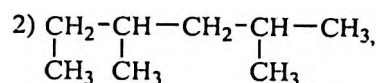
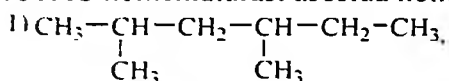
18. Quyidagi uglevodorodlarni ratsional va sistematik nomenklatura bo'yicha nomlang:



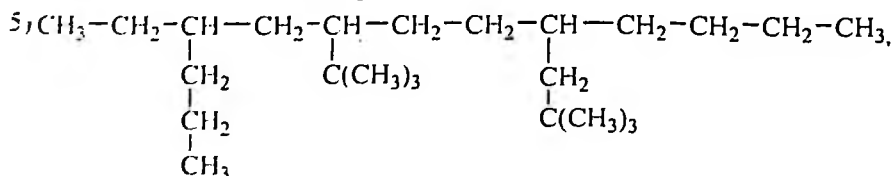
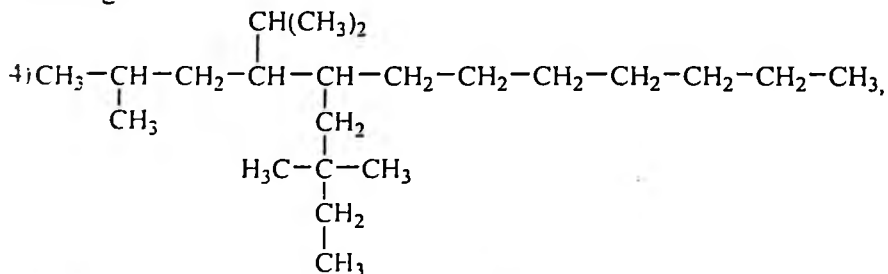


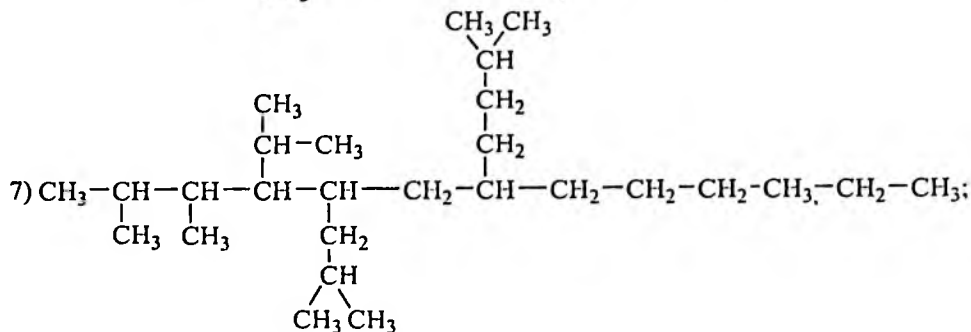
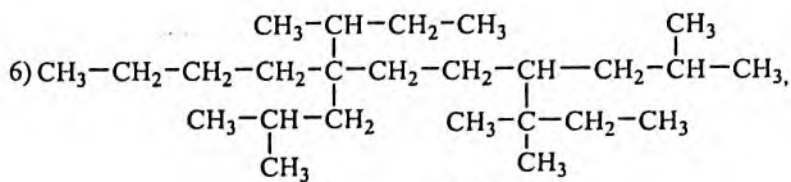
19. C_6H_{13} tarkibli izomer radikalning tuzilish formulalarini yozing va ularni sistematik nomenklatura bo'yicha nomlang.

20. Quyida necha xil alkanlarning formulari keltirilgan? Ularni IUPAC nomenklaturasi asosida nomlang.

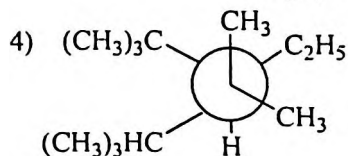
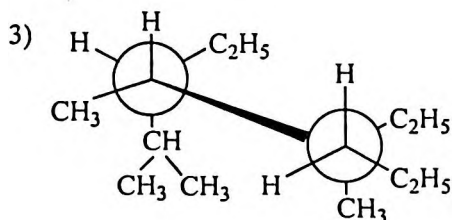
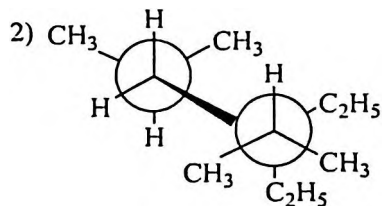
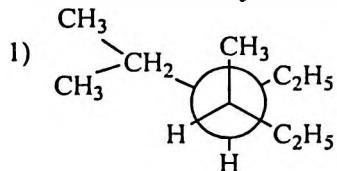


21. Quyidagi uglevodorodlarni sistematik nomenklatura bo'yicha nomlang:





22. Nyumen proyeksiyalari ko'rinishida ifodalangan uglevodorodlarning tuzilish formulalarini yozing va usullarni IUPAK nomenklaturasi bo'yicha nomlang.



23. 1,12 l to'yingan uglevodorodning massasi 2,9 g keladi va u tarkibida faqat birlamchi, uchlamchi uglerod atomlarini tutadi. Uning struktura formulasini toping.

24. Tarkibida 83,33% uglerod saqlagan vodorodli A modda ma'lum. Moddaning formulasini toping.

25. Vodorodga nisbatan zichligi 36 bo'lgan 7,2 g organik moda yondirilganda 22 g karbonat anhidrid va 10,8 g suv hosil bo'ldi. Birikma radikal xlorlanganda bitta monoxlorli hosila hosil bo'lsa, uning tuzilishini toping.

26. Uglevodorod 82,76% uglerod, 17,24% (massa bo'yicha) vodorod saqlaydi. Radikal monoxlorlanganda ikkita: birlamchi va uchlamchi alkilxloridlar hosil qiladi. Boshlang'ich uglevodorodning tuzilishini aniqlang.

27. Vodorodga nisbatan zichligi 36 ga teng bo'lgan uglevodorod tarkibidagi elementlarning massa ulushlarini toping.

28. Ikkita to'yingan uglevodorod bir xil : 85,714% uglerod va 14,286% vodorod (massa bo'yicha) saqlaydi. Uglevodorodlarning neonga nisbatan zichliklari 2,8 va 3,5 ga teng. Uglevodorodlarning molekulyar formulalarini aniqlab, ularning ikki izomerlarining tuzilish formulalarini yozib, sistematik nomenklatura bo'yicha nomlang.

29. To'yingan uglevodorod xlorli hosilasining molekulyar massasi 237 va tarkibida 89,9% xlor bor. Uning molekulyar formulasini toping.

30. 0,1 mol uglevodorod to'liq yonganda hosil bo'lgan karbonat anhidrid mo'l miqdordagi ohakli suv bilan 60 g cho'kma beradi. Bu uglevodorod bitta to'rtlamchi uglerod atomi saqlagan bo'lsa, uning molekulyar formulasi va tuzilishini aniqlang.

31. Bug'ining havoga nisbatan zichligi 2,707 ga teng, tarkibida uglerod, vodorod va xlor bor organik birikmaning ma'lum bir qismi yonishidan 13,2 g karbonat anhidrid va 6,3 g suv hosil bo'ldi. Xuddi shuncha namunadagi xlorning miqdorini aniqlashdan 14,35 g kumush xlorid olindi. Noma'lum birikmaning formulasini aniqlang.

32. Normal sharoitdagi 112 ml gaz yondirilganda 448 ml CO₂ hosil bo'ldi. Gazning vodorodga nisbatan zichligi 29 bo'lsa uning formulasini toping.

33. Tarkibida 93,7 % uglerod va 6,25 % vodorod saqlagan moddaning formulasini toping. Moddaning havoga nisbatan zichligi 4,41 ga teng.

34. 3,2g modda yondirilganda 9,9 g CO₂ va 4,5 g suv hosil bo'ldi. Moddaning vodorodga nisbatan zichligi 64 ga teng bo'lsa moddaning formulasini toping.

35. 1 mol to'yingan uglevodorod yonganda 22,4 l karbonat anhidrid va 36 g suv hosil bo'ldi. To'yingan uglevodorodning

molekulyar formulasini toping va uning 1 litrini yoqish uchun qancha kislorod kerak bo'ldi?

36. Bug'larining vodorodga nisbatan zichligi 36 bo'lgan 7,2 g organik modda yondirilganda 22 g CO₂ va 10,8 g suv hosil bo'ldi. Shu organik modda radikal xlorlanganda faqat bitta monoxlorli hosila olinishi mumkinligi ma'lum. Boshlang'ich birikmaning tuzilishini aniqlang.

37. Alkan va kislorodning aralashmasining vodorodga nisbatan zichligi 16,67 ga teng. Uglevodorod to'liq yonib, aralashma sovutilgandan keyingi gazlar aralashmasining vodorodga nisbatan zichligi 19 ga teng bo'ldi. Uglevodorodning formulasini toping.

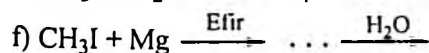
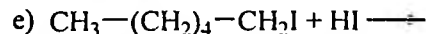
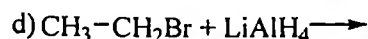
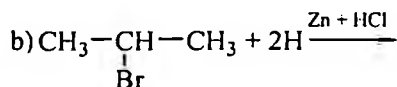
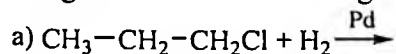
38. Stixiometrik nisbatlarda olingan alkan va kislorod aralashmasi yondirilgandan keyin, suv bug'lari kondensatsiyalandi va boshlang'ich sharoitga keltirilganda, mahsulot hajmi ikki marta kamaydi. Boshlang'ich aralashmadagi alkanni aniqlang.

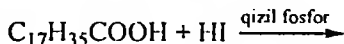
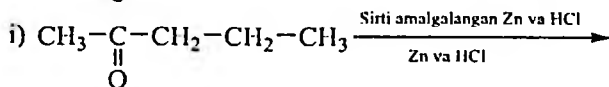
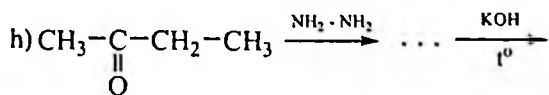
39. 5 ml gazsimon uglevodorod 12 ml kislorod bilan evdiometrda joylandi va portlatildi. Gazlar aralashmasi normal sharoitga keltirilgach uning hajmi 7 ml bo'lib, ishqor eritmasidan o'tkazilganda 2 ml gacha kamaydi va qolgan gaz yonishga yordam beradigan gaz bo'lib chiqdi. Uglevodorodning formulasini toping.

40. Normal sharoitda zichligi 2,5 g/l bo'lgan A uglevodorod kaliy permanganatni rangsizlantirmaydi va platina ishtirokida vodorod bilan ta'sirlashib ikki moddaning aralashmasini hosil qiladi. A moddaning tuzilishini toping.

41. Pentanning noma'lum uglevodorod bilan aralashmasida uglerodning massa ulushi 85% ni tashkil etadi. Bu aralashmani yoqish uchun talab qilinadigan kislorodning hajmi aralashmaning hajmidan 6,5 baravar ko'p bo'lib chiqdi. Bu masalaning shartini qanoatlantiradigan barcha uglevodorodlarning formulalarini yozing.

42. Quyidagi reaksiyalarning tenglamalarini yozing va hosil bo'lgan alkanlarni nomlang:

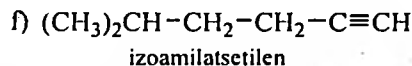
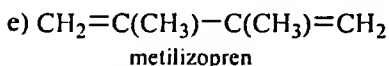
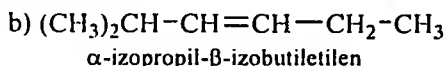
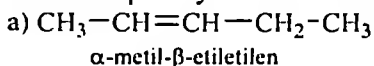




43. Quyidagi: a) metil yodid va propil yodid, b) etil bromid va izobutil bromid, d) izopropil yodid va izoamil yodid, e) n-butil bromid va izobutil bromid aralashmalariga natriy ta'sir ettirilganda qanday uglevodorodlar hosil bo'ladi?

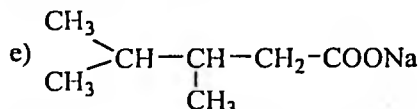
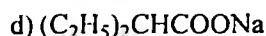
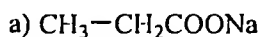
44. Vyurs reaksiyasidan foydalanib: a) 2,5-dimetilgeksan; b) tetrakontan $\text{C}_{40}\text{H}_{82}$; d) dogeksakontan $\text{C}_{62}\text{H}_{126}$; e) geptakontan $\text{C}_{70}\text{H}_{142}$ ni sintez qilish reaksiyalari tenglamalarini yozing.

45. Quyidagi to'yinmagan uglevodorodlarning katalitik gidrogenlanishidan qanday alkanlar hosil bo'ladi?



46. Tegishli karbon kislotalar natriyli tuzlarining eritmalarini elektroliz qilib: a) n- butan b) n-geksan, d) n-dekan, e) 2,3-dimetilbutan; f) 3,4-dimetilgeksanni, g) 2,2,4,4-tetrametilbutanni olish reaksiyalari tenglamalarini yozing.

47.

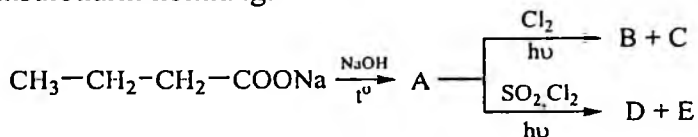


Moddalar natron ohak bilan qizdirilganda qanday alkanlar hosil bo'ladi?

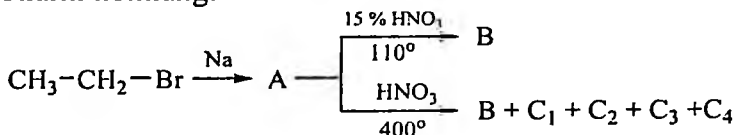
48. Olti xil usul bilan n-geksanni hosil qilish reaksiyalari tenglamalarini yozing.

49. a) 41 g suvsiz natriy atsetatdan Dyuma usulida necha millilitr (n.sh) metan olish mumkin? b) shu usulda 20 l etan (n.sh.) olish uchun sancha natriy propionat kerak bo'ladi?

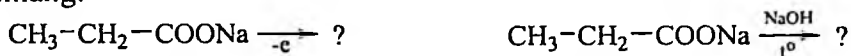
50. Aylanishlar sxemasini bajaring va oraliq hamda oxirgimahsulotlarni nomlang:



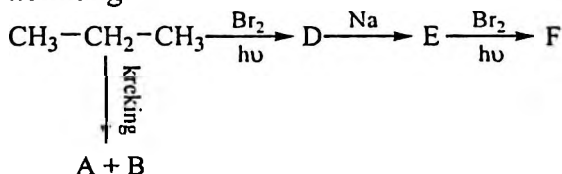
51. Quyidagi o'zgarishlarni amalga oshiring oraliq va oxirgi mahsulotlarni nomlang:



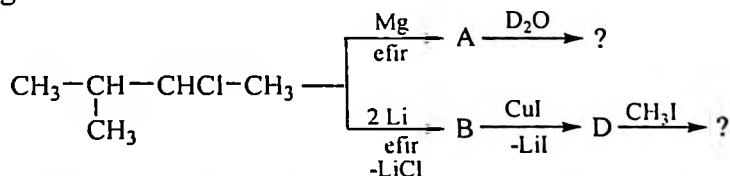
52. Reaksiya tenglamalarini oxiriga yetkazing va birikmalarni nomlang:



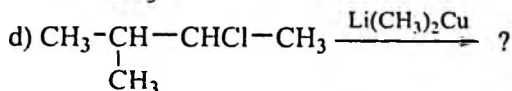
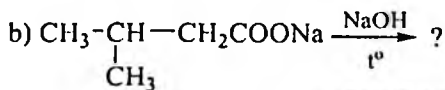
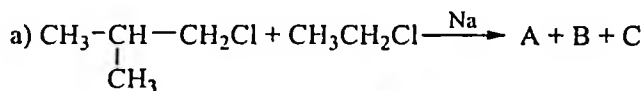
53. Aylanishlar sxemasini bajaring va barcha oraliq hamda oxirgi mahsulotlarni nomlang.



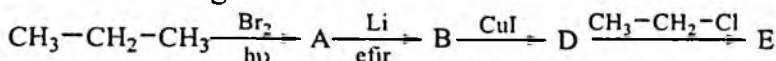
54. Reaksiya tenglamalarini oxiriga yetkazing va birikmalarni nomlang:



55. Reaksiya tenglamalarini oxiriga yetkazing va birikmalarni nomlang:



56. Aylanishlar sxemasini bajaring va barcha oraliq hamda oxirgi mahsulotlarni nomlang.

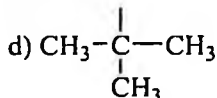
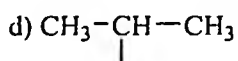
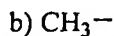
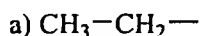


57. Nega alkanlar benzol va efirda eriydi-yu, suvda va boshqa qutbli erituvchilarda erimaydi?

58. Quyidagi alkanlarni qaynash haroratining ortib borishi tartibida yozing: a) butan, b) izobutan, d) n-peptan, e) izopentan, f) neopentan, g) izogeksan, h) 2,2- dimetilbutan, i) n-geksan.

59. a) butan, b) izobutan, d) 2, 2, 4- trimetilpeitan va e) neopentannng fotokimyoviy xlorlanishidan nechtdan monoxloralkanlar hosil bo'ladi? Ularning hosil bo'lish reaksiyalari tenglamalarni yozing.

60. Quyidagi radikallarni barqarorligi oshib borishi tartibida yozing. Ularning nisbiy barqarorligiga metil guruhlarining ta'sirini tushuntiring:



61. a) propan, b) izobutan, d) izopentan, e) n- pentan, f) neogektan, g) 2, 2, 3-trimetilbutan 25°C da yorug'lik ta'sirida monoxlorlanganda birlamchi, ikkilamchi va uchlamchi vodorod atomlarining xloga almashinish tezligi (bitta vodorod atomi uchun) tegishli ravishda 1,0: 3,8: 5,0 ga tengligini hisobga olib, hosil bo'ladigan izomerlarning massa ulushini aniqlang.

62. a) izobutan, b) n-pentan, d) 2, 2, 4-trnmetilpentan 127°C da yorug'lik ta'sirida bromlanganda, birlamchi, ikkilamchi va uchlamchi vodorod atomlarining bromga almashinish tezligi (bitta vodorod atomi

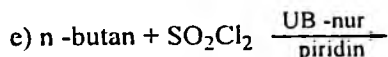
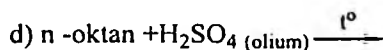
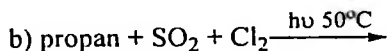
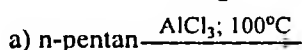
uchun) tegishli ravishda 1:82:1600 ga tengligini hisobga olib, hosil bo'ladigan izomer monobromalkailarning massa ulushini aniqlang.

63. Alkanlarni bromlash reaksiyasining xlorlashga nisbatan yuqori selektivligini tushuntiring.

64. a) n- pentan, b) izopentan, d) neopentanni suyuq fazada nitrolash (M. I. Konovalov) reaksiyalari tenglamalarini yozing. Bu reaksiyalarning borish sharoitlarini ko'rsating va uglevodorodlarni oson nitrolanish tartibida joylashtiring.

65. a) n- butan, b) izobutan, d) izopentanni 400-450°C da bug' fazada azot oksidlari bilan nitrolaganda qanday mononitrobirikmalar hosil bo'lish reaksiyalari tenglamalarini yozing va ularning mexanizmini tushuntiring.

66. Quyidagi reaksiyalar tenglamalarini yozing va hosil bo'lgan birikmalarni nomlang:



67. Gaz holatdagi 0,5 l uglevodorodning yonishidan (n.sh. da) l CO₂ va 2,009 g suv, uning monoxlorlanishidan esa birlamchi va uchlamchi galogenidlar aralashmasi hosil bo'ladi. Bu uglevodorodning, tuzilishini aniqlang.

68. n-oktan termik kreklinglanganda qanday uglevodorodlar hosil bo'lishi mumkin? Ularning reaksiya tenglamalarini yozing.

69. Sanoatda neftning yuqori parafinlarini 110-150°Cda marganets birikmalari katalizatorligida havo bilan oksidlab, sintetik yuqori yog' kislotalar olinadi. Shu jarayonda boradigan muhim reaksiya tenglamalarini yozib, ularning mexanizmlarini tushuntiring.

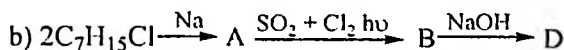
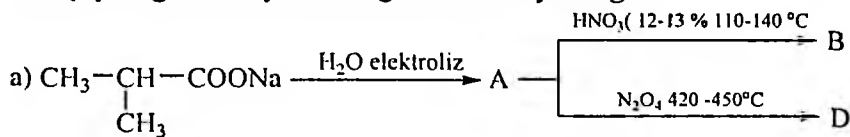
70. a) 3 l metan, b) 26 ml etan va d) 1 l propan yonishidan hosil bo'ladigan karbonat angidridning hajmini aniqlang.

71. 3 kg propan to'la yonganda sarf bo'ladigan havoning hajmini aniqlang.

72. C₅H₁₂ uglevodorodning monoxlorlanishidan birlamchi xloruglevodorod, Konovalov reaksiyasi bo'yicha nitrolanishidan esa birlamchi nitrobirikma olinadi. Uglevodorodning tuzilishini aniqlang.

73. C₆H₁₄ izotuzilishli alkanning monobromlanishidan birlamchi va ikkilamchi bromli uglevodorodlar aralashmasi hosil bo'ladi. Bu uglevodorodning tuzilishini aniqlang.

74. Quyidagi reaksiyalar tenglamalarini yozing:



75. Alkanlardagi C—H bog'larning valent va deformatsion tebranishlari IQ- spektrning qaysi sohalarida kuzatiladi?

76. PMR spektrida yagona signal δ 0,82 million hissani saqlagan C_5H_{12} tarkibli alkannng tuzilishini aniqlang.

77. C_6H_{14} uglevodorodni bromlaganda asosan uchlamchimonobromid hosil bo'ladi. C_6H_{14} uglevodorod izomoy kislota tuzini elektroliz qilish yo'li bilan sintez qilish mumkin. C_6H_{14} uglevodorod tuzilishini aniqlang. Reaksiya tenglamalarini yozing.

78. Ishqor qo'shib suyultirilganda propanga, Kolbe bo'yicha elektroliz qilinganda 2,3-dimetilbutanga aylanadigan karbon kislota tuzini aniqlang.

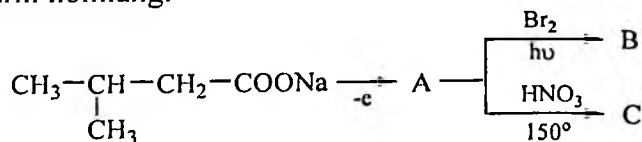
79. Ishqor qo'shib suyultirilganda propanga, Kolbe bo'yicha elektroliz qilinganda 4,5-dimetiloktanga aylanadigan karbon kislota tuzini aniqlang. Reaksiya tenglamalarini yozing.

80. Tarkibida 15,5 % qo'shimcha saqlagan 16 g alyuminiy karbidining gidrolizidan qancha hajm (l n.sh.) metan ajraladi?

81. 41 g suvsiz natriy atsetatning mo'l natriy gidroksid bilan aralashmasi qizdirilganda ajralib chiqqan gaz yorug'da xlor bilan reaksiyaga kirishib, tetraxlormetan hosil qiladi (unum 50%). Bunda qancha massa CCl_4 olinganligini aniqlang.

82. Metandan 2,2,3,3-tetrametilbutan olish uchun zarur reaksiyalarning ketma-ketligini yozing.

83. Quyidagi o'zgarishlarni amalga oshiring oraliq va oxirgi mahsulotlarni nomlang:



84. Ishqor bilan qizdirilganda tetrametilmetan hosil qilgan karbon kislota tuzining elektrizidan olingan $C_{10}H_{22}$ tarkibli uglevodorod qanday tuzilishga ega?

85. HI bilan qizdirilishidan izobutan, Na ta'sirida 2,5-dimetilgeksan hosil qiladigan alkilyodidning tuzilishini aniqlang. Reaksiyalar tenglamalarini yozing.

86. 8,6 g ulevodorod to'liq yonganda 13,44 l (n.sh) karbonat anhidrid ajraldi. To'yingan uglevodorodning molekulyar formulasini toping.

87. A modda oksidlanganda undan miqdori ikki marta ko'p bo'lgan B modda hosil bo'ladi. B modda magniy bilan ta'sirlashganda C modda va vodorod hosil bo'ladi. A,B,C moddalarni aniqlab reaksiyalarning tenglamalarini yozing.

88. Tarmoqlanmagan tuzilishli A uglevodorod B moddaga izomerlanib, u esa degidrogenlanganda kauchuk sintez qilishda ishlatiladigan C modda hosil bo'ladi. A,B,C moddalarni aniqlab reaksiyalarning tenglamalarini yozing.

89. 80 ml CO , vodorod, metan va kisloroddan iborat aralashma portlatilganda 42 ml aralashma hosil bo'ldi. $CO:H_2:CH_4$ larning hajmiy nisbatlari 1:2:3 bo'lsa aralashmaning foiz tarkibini toping.

90. To'yingan monokarbon kislotaning 28,8 g natriyli tuzi mo'l miqdor $NaOH$ bilan suyuqlantirilganda 4,704 l gaz ajralib chiqdi. bu nazariy jihatdan chiqishi mumkin bo'lgan gazning 70 % ini tashkil etadi. Qanday gaz ajralib chiqqanligini va karbon kislotaning nomini toping.

91. 1-xlorpropan va 1-xlorbutan aralashmasiga natriy metalli ta'sir ettirilganda hosil bo'ladigan moddalarning tuzilish formulalarini yozing va ularni sistematik nomenklatura bo'yicha nomlang. Sarflanayotgan natriy miqdori hosil bo'layotgan uglevodorodlarning miqdoriy tarkibiga bog'liq yoki bogliq emasligini aniqlang.

92. Vodorod, etilen va atsetilen aralashmasi nikel katalizatori ustidan o'tkazilganda to'liq etanga aylanishi uchun aralashmaning o'rtacha molyar massasi qanday qiymatga ega bo'lishi kerak?

93. 28,8 g to'yingan monokarbon kislotaning natriyli tuzi mo'l miqdordagi natriy gidroksid bilan ta'sirlashganda 79% nisbatda bilan 4,63 l (n.sh) gaz ajraldi. Qanday gaz ajralgan?



94. To'yingan monokarbon kislotaning 28,8 g natriyli tuzi mo'l natriy gidroksid bilan birga suyuqlantiriganda 4,704 l gaz ajralib chiqdi, bu nazariy jihatdan chiqishi mumkin bo'lgan gazning 70% ini tashkil etadi. Qanday gaz ajralib chiqqanligini aniqlang.

95. A uglevodorod krekinglanganda uglerod atomlari soni teng bo'lgan ikkita uglevodorod hosil bo'ladi. Nisbiy molekulyar massasi kichik bo'lgan B uglevodorod degidrogenlanganda kauchuk sintez qilishda ishlatiladigan C moddani hosil qiladi. Reaksiyalarning tenglamalarini yozing.

96. Natriy atsetat va natriy gidroksiddan iborat 41 g aralashma qizdirilganda, yorug'lik ishtirokida xlor bilan reaksiyaga kirisha oladigan gaz ajraldi. Oxirgi reaksiya natijasida 11,95 g trixlormetan (xloroform) hosil bo'ladi. Xloroformning unumi 60% ni tashkil etsa, boshlang'ich aralashmadagi moddalarning massa ulushlarini toping.

97. Metanning ma'lum bir hajmi 10 g keladi. Xuddi shu sharoitda shuncha hajm propaning massasini toping.

98. 18 sm³ uglevodorodlar (uglerod atomlari soni bir xil) aralashmasi yondirilganda 36 sm³ karbonat angidrid va 0,0362 g suv hosil bo'ladi. Aralashma kumush oksidning ammiakdagi eritmasi bilan hech qanday cho'kma bermaydi. Dastlabki aralashmaning hajm bo'yicha foiz tarkibini toping.

99. Etan va kislorod aralashmasining 1100 ml miqdori yondirildi. Suv bug'lari kondensatsiyalangandan so'ng mahsulot hajmi 600 ml gacha kamaydi. Boshlang'ich aralashmadagi etanning hajmiy ulushini toping.

100. Bir hajm gazsimon uglevodorodning yonishi uchun 25 l havo sarflandi. Havoda kislorodning hajmiy ulushi 20 % ga teng. Qaysi uglevodorod yondirilgan?

101. Havoga nisbatan zichligi 0,6 ga teng bo'lgan 3 l metan-etan aralashmasini yondirish uchun necha l kislorod kerak?

102. Hajmi 2,1 l bo'lgan idishdagi propan va kislorod aralashmasi portlatildi. Reaksiya tugagandan so'ng, suv bug'lari kondensatsiyalandi, mahsulot hajmi 1,2 l gacha kamaydi. Boshlang'ich aralashmadagi propaning hajmiy ulushini toping.

103. Hajmi 5,6 l bo'lgan izobutan kuydirilganda hosil bo'lgan mahsulotlar tarkibida 40 g natriy gidroksidi saqlagan eritma orqali o'tkazilganda hosil bo'lgan tuz va uning miqdorini aniqlang.

104. 11,4 g izooktan to'liq yondirilganda hosil bo'lgan karbonat anhidridni yuttirish uchun natriy gidrooksidning 10 % li ($\rho=1,1\text{ g/sm}^3$) eritmasidan qancha ml kerak bo'lishini hisoblang.

105. 30 kg 15 % li geksanning oktandagi eritmasini to'liq yondirish uchun necha m^3 kislorod sarflanadi va bunda necha m^3 CO_2 hosil bo'ladi?

106. Havoga nisbatan zichligi 1,2 ga teng bo'lgan 5 l propan-etan aralashmasini to'liq yondirish uchun tarkibida 20 % ozon saqlagan kisloroddan necha l kerak?

107. Kislorodga nisbatan zichligi 1,6 bo'lgan etan-pentan aralashmasini yondirish uchun tarkibida 20 % ozon tutgan kisloroddan 50 l sarflandi. Dastlabki aralashmadagi har bir gazning hajmlarini toping.

108. Qanday hajmdagi metanni yoqish uchun tarkibida 20% ozon saqlagan kislorod sarflanadi?

109. 8,96 l metan va etan aralashmasi yonishidan hosil bo'lgan gaz 200 ml 0,6 M eritmasi bilan to'liq reaksiyaga kirishadi. Dastlabki aralashmaning foiz tarkibini toping.

110. 6 l etanni yondirish uchun vodorodga nisbatan zichligi 18.56 bo'lgan ozon va kislorod aralashmasidan qancha sarflanadi.

111. 11,4 g izooktan (2,2,4-trimetilpentan) to'liq yondirilganda hosil bo'lgan CO_2 yuttirish uchun NaOH ning 10% li eritmasidan ($\rho=1,1\text{ g/sm}^3$) qancha hajm (ml) da talab bilinadi? (eritmada nordan tuz hosil bo'ladi).

112. To'yingan uglevodorodning ma'lum miqdori yonganda 13.2 g karbonat anhidrid ajraldi. Hosil bo'lgan suvning massasini toping.

113. 6,72 l (n.sh) etan va propan aralashmasi yondirilganda hosil bo'lgan mahsulotlar mo'l miqdordagi ohakli suv bilan ishlov berildi. Bunda 80 g cho'kma tushdi. Boshlang'ich aralashmadagi gazlarning hajmlarini toping.

114. 20% propan saqlagan 28 l propan va kislorod aralashmasi bor. Aralashmani yondirib sovtugandan keyingi aralashmadagi gaz moddalarning massa ulushlarini toping.

115. 112 ml (n.sh) gazsimon to'yingan uglevodorodni radikal xlorlashda hosil bo'lgan vodorod xloridni neytrallash uchun 7.26 ml 10% li natriy gidroksid eritmasi (zichligi 1,1 g/ml) sarflandi. Xlor nechta vodorod atomining o'rnini olgan?

116. Metan, CO₂ va CO 11,2 l aralashmasi natriy gidroksidning mo'l eritmasi orqali o'tkazilganda boshlang'ich aralashmaning hajmi 4,48 l ga kamaydi. Qolgan aralashmani to'liq yondirish uchun 6,72 l kislorid kerak bo'ldi. Boshlang'ich aralashmaning tarkibini (hajmga ko'ra % da) aniqlang.

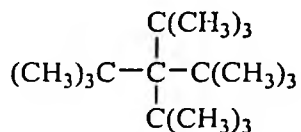
117. 11,2 l metan, karbonat angidrid va uglerod(II)-oksidi aralashmasi mo'l miqdorda olingan natriy gidroksid eritmasidan o'tkazilganda aralashmaning hajmi 4,48 l ga kamaydi. Qolgan aralashmani yoqish uchun 6,72 l kislorod talab qilindi. Boshlang'ich aralashmaning hajmiy tarkibini toping. Gazlarning hajmlari bir xil sharoitda o'lchangan.

118. Propan, metan va uglerod(IV)-oksidining aralashmasi 6,165 l hajmni egallaydi. Aralashma mo'l miqdordagi kislorodda yondirilganda 11,565 l uglerod(IV)-oksidi olindi. Aralashmadagi propanning hajmiy ulushini toping. Gazlar bir xil sharoitda o'lchangan.

Javoblar va havolalar

1. 2) 3-metil-4-etilgeksan

2. 4)



6. 9ta izomer. Qarang [6], 19b.

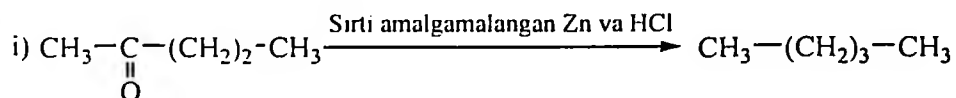
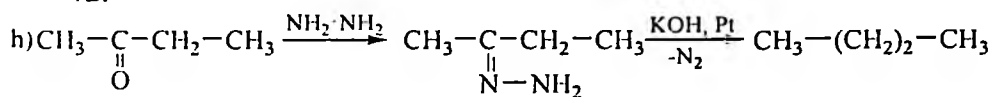
10. 1) 3,3,4,5-Tetrametil-4-etil heptan.

13. b) metildietilizopropilmetan, 2,3-dmetil-3-etil-pentan.

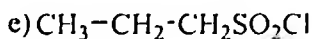
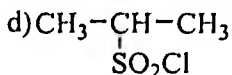
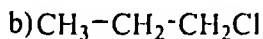
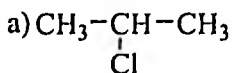
15. a,b,d, va f moddalar noto'g'ri nomlangan. Ularni tuzating.

22. 3) 2,4,5-trimetil-3,5-dietiloktan.

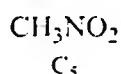
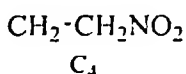
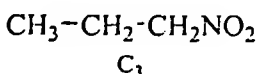
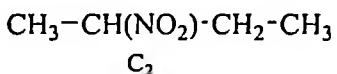
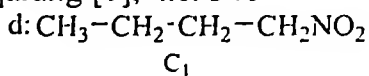
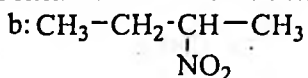
42.



50. Propanni xlrlash reaksiyalarida birlamchi va ikkilamchi vodorod atomlarini almashinish mahsulotlari hosil bo'ladi:



51. Alkanlarni nitrolash haqida qarang [1], q.c. 348



Alkanlarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalarispektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. C_6H_{14} tarkibli alkanning nechta strukturaviy izomeri bor?

A) to'rtta B) beshta C) oltita D) yettita

4, 64-b.

2. Quyidagi formulalar orasidan bir xil (faqat yozilishi bilangina farq qiladigan) lari bormi?

1) $\text{C}_2\text{H}_5\text{CH}(\text{CH}_3)\text{CH}_2\text{C}(\text{CH}_3)_3$; 2) $\text{CH}_3\text{CH}(\text{C}_2\text{H}_5)\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_3$;

3) (ikkilamchi- C_4H_9) CH_2 (izo- C_3H_7) ;

A) 1 va 2 bir xil

B) 1 va 3 bir xil

C) 2 va 3 bir xil

D) bir xillari yo'q

2, r.1, c. 135.

3. Metil radikalining fazoviy tuzilishi qanday? Undagi uglerod atomi qanday gibridlanish holatida bo'ladi? Toq elektron gibrid orbitalda joylashadimi yoki sof orbitaldami?

A) Tekis tuzilishga ega emas. Undagi uglerod atomi sp^3 -gibridlangan holatda bo'lib, toq elektron gibridlangan orbitalda joylashgan

B) Deyarli tekis tuzilishga ega. Undagi uglerod atomi sp^2 -gibridlangan holatda bo'lib, toq elektron gibridlanmagan p-orbitalda joylashgan

C) Deyarli tekis tuzilishga ega. Undagi uglerod atomi sp^3 -gibridlangan holatda bo'lib, toq elektron gibridlangan p-orbitalda joylashgan

D) Deyarli tekis tuzilishga ega. Undagi uglerod atomi sp-gibridlangan holatda bo'lib, toq elektron gibridlangan p-orbitalda joylashgan

2. τ.1. c. 149.; 6, 20-b.

4. Pentil radikallarining soni nechta?

A) sakkizta B) beshta C) oltita D) yettita

5. Quyidagi uglevodorodni sistematik nomenklaturaga binoan nomlang. $\text{CH}_3(\text{CH}_2)_3\text{CH}(\text{CH}_3)\text{CH}(\text{CH}_2\text{CH}_2\text{CH}_3)_2$

A) 5-metil-6-propilnonan B) dipropil-1-metilpentilmetan
C) 5-metil-4-propilnonan D) dipropilizogeksilmetan

4. 65-68-b.; 6, 8-11-b.

6. $(\text{CH}_3)_2\text{CHC}(\text{CH}_3)(\text{CH}_2\text{CH}_3)\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_3$ tuzilishli uglevodorodni ratsional nomenklaturaga binoan nomlang.

A) metilizopropiletikkilamchibutilmetan
B) metiletilizopropilikkilamchibutilmetan
C) 2,2,3-trimetil-3-etilgeksan
D) metiletilizopropilizobutilmetan

4. 65-66-b.; 6, 8-b.

7. 2-metil-3-etilbutan sistematik nomenklatura qoidalariga muvofiq to`g`ri nomlanganmi?

A) to`g`ri nomlangan
B) nomning tarkibiy qismlari noto`g`ri joylashtirilgan
C) bosh zanjir noto`g`ri tanlangan
D) noto`g`ri raqamlangan

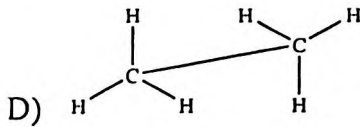
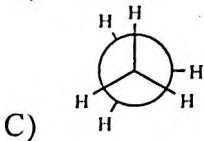
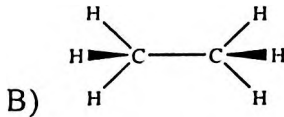
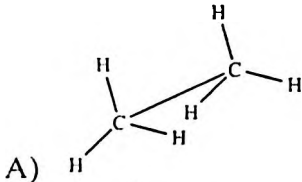
4. 65-67-b.; 6, 9-10-b.

8. C_8H_{18} tarkibli alkanning bir vaqtning o`zida ham birlamchi, ham ikkilamchi, ham uchlamchi, ham to`rtlamchi uglerod atomlarini saqlagan izomerlari soni nechta?

A) uchta B) oltita C) beshta D) to`rtta

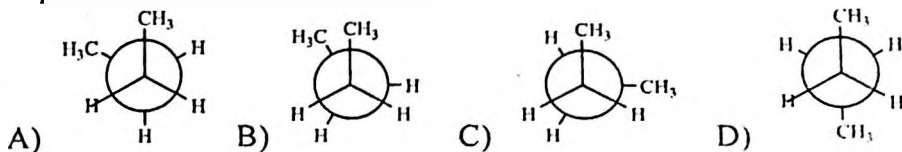
6, 19-20-b.

9. Etanning quyidagi konformerlaridan qaysi biri tormozlangan konformer?



1, ч.1, с.321-325.; 4, 73-75-b.

10. *n*-Butanning konformatsiyalaridan qaysi biri nisbatan eng barqaror anti-konformer sanaladi?



1, ч.1, с.326-328.; 4, 74-75-b.

11. Konformatsion izomerlar yoki konformerlar izomeriyaning qaysi turiga kiradi?

- A) metameriya
B) geometrik izomeriya
C) aylanma izomeriya
D) uglerod skeleti izomeriyasi

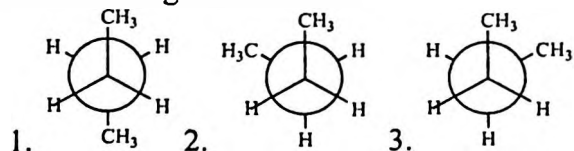
4, 8-11-b.

12. *n*-Butanning gosh-konformatsiyalarida C₂-C₃ bog' atrofida aylanish burchagi (ikki qirrali burchak) necha gradusga teng?

- A) 0°
B) 60°
C) 120°
D) 180°

15, с. 98-99.

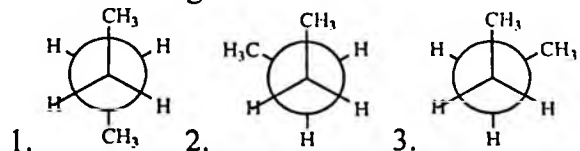
13. Quyidagi konformerlar orasida bir-biriga konformatsion enantiomer bo'lganlari bormi?



- A) enantiomerlar yo'q
B) 1 va 2 bir-biriga enantiomer
C) 2 va 3 bir-biriga enantiomer
D) 1 va 3 bir-biriga enantiomer

11, 110-b.; 15, с. 99-100.

14. Quyidagi konformerlar orasida bir-biriga konformatsion diastereomer bo'lganlari bormi?



- A) diastereomerlar yo'q

- B) 1 va 2 hamda 1 va 3 bir-biriga diastereomer
 C) 2 va 3 bir-biriga diastereomer
 D) 1 va 3 bir-biriga diastereomer

15. c. 99-100.

15. Alkanlarning molekulasida C—C bog' uzunligi va valent burchagi nechaga teng?

- A) 0.140 nm, 120° B) 0,120 nm, 180°
 C) 0.154 nm, 109°28' D) 0,134 nm, 120°

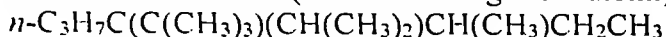
4. 72-b.

16. C₇H₁₆ tarkibli alkanning to'rtta izomeridan qaysi biri ikkita enantiomer (ko'zgu izomer yoki optik antipod)lar holida uchraydi?

- A) 2-metilgeksan B) 3-metilgeksan
 C) 2,4-dimetilpentan D) 3,3-dimetilpentan

4. 72-73-b.

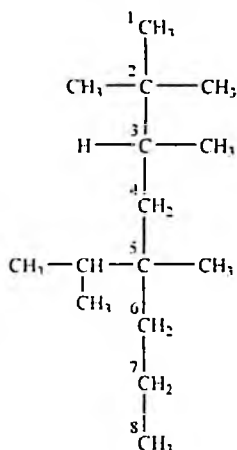
17. Tuzilishi quyidagicha bo'lgan alkanning molekulasida nechta xiral markaz (asimmetrik uglerod atomi) bor?



- A) bitta B) ikkita C) uchta D) to'rtta

2, τ.1, c. 179-181.

18.



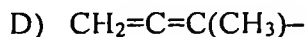
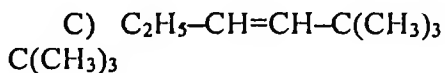
tuzilishli alkanning xiral markazlari absolyut konfiguratsiyasini R,S-nomenklaturaga binoan to'rtta talaba (A,B,C,D) to'rt xil aniqladi. Talabalarning qaysi biri har ikkala xiral markazning absolyut konfiguratsiyasini to'g'ri aniqlagan?

- A) 3R, 5S B) 3S, 5R
 C) 3R, 5R D) 3S, 5S

2. τ.1. c. 188-196.; 4, 12-13-b.

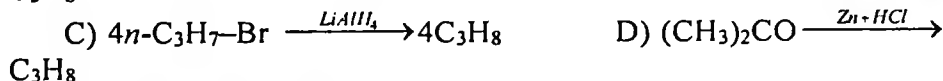
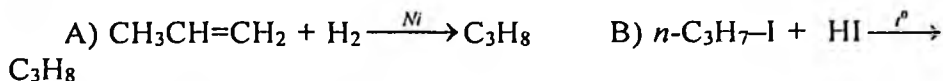
19. To'yinmagan uglevodorodlardan qaysi birini katalitik gidrogenlaganda izooktan (2,2,4-trimetilpentan) hosil bo'ladi?

- A) izo-C₃H₇-C≡C-izo-C₃H₇ B) CH₂=C(CH₃)-CH₂-C(CH₃)₃



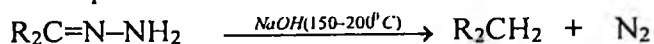
2, т.1, с. 138.; 4, 70-b.

20. Reaksiyalarning qaysi biri Klemmensen bo'yicha qaytarish deb ataladi?



3, с. 452-453.; 6, 22-b.

21. Aldegid va ketonlarning gidrazonlari qattiq holatdagi o'yuvchi ishqorlar bilan qizdirilganda erkin azot ajralib, alkanlarni hosil qiladi:



Bu kimning reaksiyasi deb yuritiladi?

A) Kijner-Volf

B) P. Sabate

C) J. Dyuma

D) A.M. Zaytsev

3, с. 453.

22. Izopropil yodid va neopentil yodid aralashmasini natriy metalli bilan qizdirilganda qanday alkan(lar) hosil bo'ladi?

A) faqat 2,2,4-trimetilpentan

B) faqat 2,3-dimetilbutan

C) faqat 2,2,5,5-tetrametilgeksan

D) 2,2,4-trimetilpentan, 2,3-dimetilbutan va 2,2,5,5-tetrametilgeksan aralashmasi

4, 70-b.

23. Karbon kislotalar tuzlarining suvdagi eritmaları elektroliz qilinganda anodda CO_2 ajraladi va alkanlar hosil bo'ladi. Bu reaksiya kimning nomi bilan yuritiladi?

A) A. Kolbe

B) A. Kekule

C) A. Kuper

D) Sh. Jerar

4, 71-b.

24. Qaysi karbid suv bilan reaksiyaga kirishganda metan hosil bo'ladi?

A) BaC_2

B) CaC_2

C) SrC_2

D) Al_4C_3

4, 82-b.

25. C–H bog'laridan qaysi birining gomolitik uzilishi uchun eng kam energiya talab qilinadi?

- A) $\text{H}_3\text{C}-\text{H}$ B) $\text{H}_3\text{C}-\text{CH}_2-\text{H}$ C) $(\text{CH}_3)_2\text{CH}-\text{H}$ D) $(\text{CH}_3)_3\text{C}-\text{H}$

2, T.1, c. 78.

26. Uglevodorod zanjirida tarmoqlanishning ko'payishi izomer alkanlarning fizikaviy xossalariga ta'sir qiladimi?

- A) ta'sir qilmaydi
B) tarmoqlanishning ko'payishi bilan qaynash harorati pasayadi
C) tarmoqlanishning ko'payishi bilan suyuqlanish harorati oshadi
D) tarmoqlanishning ko'payishi bilan suyuqlanish harorati pasayadi

4, 71-b.

27. Alkanlarni qorong'ida termik xlrlash reaksiyasi qanday haroratda kechadi?

- A) 100°C B) 105°C C) 200°C D) $250-400^\circ\text{C}$

2, T.1, c. 147.; 4, 75-b.

28. Alkanlarni fotokimyoviy va termik xlrlash reaksiyalari qanday mexanizm bo'yicha boradi?

- A) $\text{S}_{\text{N}}1$ B) $\text{S}_{\text{N}}2$ C) S_{R} D) S_{E}

2, T.1, c. 147-148.; 4, 75-76-b.

29. Izopentanni xlrlash va bromlash reaksiyalarida xlor va brom stereosektivligi (regiosektivligi) bilan bir-biridan farq qiladimi?

- A) farq qilmaydi
B) xlorning stereosektivligi yuqori
C) bromning stereosektivligi sal yuqori
D) bromning stereosektivligi behad yuqori

4, 77-78-b.

30. S_{R} -mexanizm bo'yicha kechadigan xlrlash reaksiyalarida alkanlardagi birlamchi, ikkilamchi va uchlamchi vodorod atomlarining xlrga almashinish tezligini taqqoslang.

- A) birlamchi vodorod atomlari xlrga eng oson almashinadi;
B) ikkilamchi vodorod atomlari xlrga eng oson almashinadi;
C) uchlamchi vodorod atomlari xlrga eng oson almashinadi;
D) birlamchi, ikkilamchi va uchlamchi vodorod atomlari xlrga almashinish tezligi jihatdan bir-biridan farq qilmaydi;

4, 78-b.

31. Izopentan nur ta'sirida qizdirish bilan bromlaganda hosil bo'ladigan aralashmada qaysi monobromalkanning miqdori eng ko'p bo'ladi?

- A) 1-brom-2-metilbutan
- B) 2-brom-2-metilbutan
- C) 2-brom-3-metilbutan
- D) 1-brom-3-metilbutan

4, 78-b.

32. Metanning katalizator (AlCl_3) ishtirokida xlorlanishi qanday mexanizm bo'yicha boradi?

- A) E_1
- B) $\text{S}_{\text{N}}1$
- C) $\text{S}_{\text{N}}2$
- D) S_{E}

4, 79-b.

33. Neopentanni fotokimyoviy xlorlanishida necha xil monoxloralkan hosil bo'ladi?

- A) bir xil
- B) ikki xil
- C) uch xil
- D) to'rt xil

34. Pentanning uchta izomeridan qaysi biri suyuq fazali nitrolash reaksiyasiga eng oson kirishadi?

- A) n-pentan
- B) izopentan
- C) neopentan
- D) reaksiyaga kirishish qobiliyati jihatdan bir-biridan farq qilmaydi.

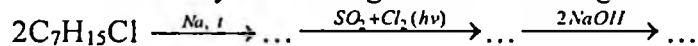
6, 23-b.

35. Propanni 420°C da nitrat kislotaning bug'i bilan nitrolaganda qanday mononitroalkan (yoki mononitroalkanlar) hosil bo'ladi?

- A) 1-nitropropan
- B) 2-nitropropan
- C) 1-nitropropan va 2-nitropropan
- D) 1-nitropropan, 2-nitropropan, nitroetan va nitrometan

1, 4.1, c.348-349.; 4, 137-b.

36. Reaksiyalar oxirgi mahsulotining formulasini aniqlang:



- A) $\text{C}_7\text{H}_{15}\text{SO}_3\text{Na}$
- B) $\text{C}_7\text{H}_{15}\text{SO}_2\text{Cl}$
- C) $\text{C}_{14}\text{H}_{29}\text{SO}_3\text{Na}$
- D) $\text{C}_{14}\text{H}_{29}\text{SO}_2\text{OH}$

37. Massasi 90 g bo'lgan etan yonganda necha mol karbonat anhidrid hosil bo'ladi?

- A) 12 mol
- B) 10 mol
- C) 6 mol
- D) 5 mol

38. Sanoatda butanni 145°C da $50,5 \cdot 10^5$ Pa bosimda marganets tuzlari katalizatorligida havo kislorodi bilan suyuq fazali oksidlab qanday birikma olinadi?

- A) etil spirt
B) sirka aldegid
C) sirka kislota
D) atseton

4, 272-b.

39. Butandan boshlab alkanlar izomerlanish reaksiyasiga kirishadi. Katalizatorlarning qaysi biri ishtirokida izomerlanishni qizdirmasdan xona haroratida o'tkazish mumkin?

- A) AlCl_3
B) AlBr_3
C) H_2SO_4
D) $\text{BF}_3 + \text{HF}$, $\text{SbF}_5 + \text{HF}$ yoki $\text{SbF}_5 + \text{FSO}_3\text{H}$

FSO₃H

4, 81-b.

40. Sanoatda metanni azot oksidlari katalizatorligida havo kislorodi bilan $500-600^{\circ}\text{C}$ da chala oksidlab qanday modda olinadi?

- A) metanol
B) formaldegid
C) chumoli kislota
D) atseton

4, 81-b.

41. C_5H_{12} tarkibli uglevodorodning monoxlorlanishidan birlamchi xloralkan, M.I. Konovalov reaksiyasi sharoitida nitrolanishidan esa birlamchi nitrobirikma olindi. Uglevodorodning tuzilishini aniqlang.

- A) n-pentan
B) izopentan
C) neopentan
D) izobutan

6, 18- va 23-b.

42. C_6H_{14} tarkibli izotuzilishli alkanning monobromlanishidan birlamchi va ikkilamchi bromalkanlar aralashmasi olindi. Alkanning tuzilishini aniqlang.

- A) 2-metilpentan
B) 3-metilpentan
C) 2,3-dimetilbutan
D) 2,2-dimetilbutan

6, 18- va 23-b.

43. Alkanlarning IQ-spektrlarida C–H bog'larining valent tebranishlari qaysi sohalarda kuzatiladi?

- A) $3000-2850 \text{ cm}^{-1}$
B) $3070-3055 \text{ cm}^{-1}$
C) $3110-3090 \text{ cm}^{-1}$
D) $3190-3160 \text{ cm}^{-1}$

8, 68-b.

44. PMR-spektrida yagona signal (δ 0,82 m.h.) saqlagan C_5H_{12} tarkibli alkanning tuzilishini aniqlang.

- A) n-pentan B) neopentan
C) izopentan D) izobutan

6, 19- va 23-b.

45. Alkanlarni sulfoxlorlash reaksiyalari qanday sharoitda olib boriladi?

- A) $300^\circ C$ da $HOSO_2Cl$ (xlorsulfon kislota) ta'sirida
B) sulfid angidrid va xlor aralashmasi bilan UB-nur ta'sirida
C) sulfat angidrid va xlor aralashmasi bilan $200^\circ C$ qizdirish
D) sulfid kislota va xlor aralashmasi bilan $350^\circ C$ da qizdirish

2, T.1, c. 158.; 4, 79-b.

46. Alkanlarni sulfoxlorlash reaksiyalari qanday mexanizm bo'yicha boradi?

- A) S_R B) S_{N1} C) S_E D) S_{N2}

2, T.1, c. 158.; 4, 79-b.

47. Sanoatda alkanlarni sulfoxlorlash uchun qanday xom-ashyo ishlatiladi?

- A) kerosin B) solyar moyi C) mazut
D) komponentlarga ajratmasdan neftning kerozin fraksiyasi yoki kogazin (sintinning yuqori haroratda qaynaydigan og'ir fraksiyalari)

1, T.1, c.348.; 4, 80-b.

48. Izopentanni $400-500^\circ C$ da azot oksidlari bilan bug' fazali nitrolanganda necha xil mononitrobirikmalar hosil bo'ladi?

- A) 6 xil B) 7 xil C) 8 xil D) 9 xil

6, 17- va 23-b.

49. Alkanlar IQ-spektrlarida metil va metilen guruhlari C-H bog'larining deformatsion tebranishlari qaysi sohalarda kuzatiladi?

- A) $CH_3 \delta_{C-H} 1450-1375 \text{ sm}^{-1}$; $CH_2 \delta_{C-H} 1465 \text{ sm}^{-1}$
B) $CH_3 \delta_{C-H} 1320-1302 \text{ sm}^{-1}$; $CH_2 \delta_{C-H} 1384 \text{ sm}^{-1}$
C) $CH_3 \delta_{C-H} 1210-1200 \text{ sm}^{-1}$; $CH_2 \delta_{C-H} 1260 \text{ sm}^{-1}$
D) $CH_3 \delta_{C-H} 1210-1200 \text{ sm}^{-1}$; $CH_2 \delta_{C-H} 1384 \text{ sm}^{-1}$

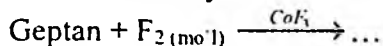
17, 37-b.

50. Quyidagi reaksiya natijasida qanday organik moddalar hosil bo'ladi? Izobutan + $CH_2N_2 \xrightarrow{\text{ultrahamqina nur}} \dots$

- A) n-pentan + n-butan B) n-geksan + propan

- C) izopentan + neopentan D) propan + *n*-butan
15. 134-135-b.

51. Reaksiya mahsulotini nomini ayting:



- A) 1-ftorgeptan B) 2-ftorgeptan
C) perftorgeptan D) 3-ftorgeptan

52. C₉H₂₀ tarkibli alkanning PMR-spektrida δ 0,98 m.h. va δ 1,26 m.h. sohalarida intensivliklari nisbati 9:1 bo'lgan ikkita signal bor. Uglevdorodning tuzilishini aniqlang.

- A) (CH₃)₂CHCH(CH₃)CH(CH₃)CH₂CH₃
B) (CH₃)₃CCH₂C(CH₃)₃
C) (CH₃)CHCH(C₂H₅)CH(CH₃)₂
D) CH₃CH₂CH(CH(CH₃)₂)C₃H₇

53. Alkanlar UB-nurlanishni qaysi sohada yutadi?

- A) λ_{maks} 250 nm B) λ_{maks} 230 nm C) λ_{maks} 210 nm D) λ_{maks} < 200 nm

8, c. 68

54. Alkanlarning IQ-spektrlarida C–H bog`ning valent tebranish chastotalari qaysi sohada yotadi?

- A) 2600-2490 sm⁻¹ B) 3000-2850 sm⁻¹
C) 2890-2700 sm⁻¹ D) 3300-3150 sm⁻¹

8, c. 68

55. Alkanlar C–H bog`ining deformatsion tebranishlari (δ_{CH}) qaysi sohada namoyon bo`ladi?

- A) 1100-1250 sm⁻¹ B) 1350-1470 sm⁻¹
C) 1480-1580 sm⁻¹ D) 1000-1090 sm⁻¹

17, c. 37

56. Bitta uglerod atomi bilan bog`langan ikkita metil guruhi (geminal almashinishi) qaysi sohada ikkita yaqin maksimum (dublet) hosil qiladi?

- A) 1100-1170 sm⁻¹ B) 1180-1290 sm⁻¹
C) 1370-1385 sm⁻¹ D) 1390-1495 sm⁻¹

17, c. 37

57. C₅H₁₂ tarkibli birikmaning PMR-spektrida δ 0,82 m.h. da bitta signal bor. Birikma tuzilishini aniqlang.

- A) *n*-pentan B) izopentan C) neopentan D) siklopentan

17, c. 76

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	B	20	D	39	D
2	C	21	A	40	B
3	B	22	D	41	C
4	A	23	A	42	D
5	C	24	D	43	A
6	B	25	D	44	B
7	C	26	B	45	B
8	A	27	D	46	A
9	D	28	C	47	D
10	D	29	D	48	D
11	C	30	C	49	A
12	B	31	B	50	C
13	C	32	D	51	C
14	B	33	A	52	B
15	C	34	B	53	D
16	B	35	D	54	B
17	B	36	C	55	B
18	A	37	C	56	C
19	B	38	C	57	C

II BOB. ALKENLAR

Alkenlarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalariga oid masala va mashqlar

1 Etilen molekulasining tuzilishi misolida sp^2 gibridlanishni tushuntiring. σ - va π - bog'lar qaysi orbitallarning qoplanishidan hosil bo'lgan? Etilenning Xyukkel Penni tavsiya etgan σ , π - modeli bilan Poling va Sleyter modeli (τ - bog'lar yordamida tasvirlash) o'rtasida qanday farq bor?

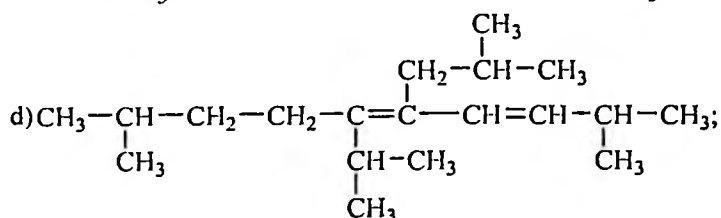
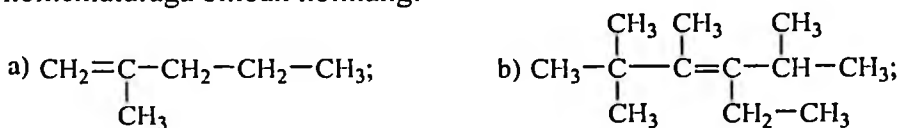
2. Propilen va 2- metil molekularining elektron formulalarini yozing. Har bir uglerod atomining gibridlanish holatini, shuningdek, C-C, C=C va C-H bog'lar qaysi orbitallarning qoplanishidan hosil bo'lganligini ko'rsating.

3. C_5H_9 - tarkibli bir valentli radikallarning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang.

4. Quyidagi uglevodorodlarning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang: a) α -etil- β -izopropiletilen; b) simm- diizobutiletilen; d) α -metil- α -etil- β -izopentiletilen; e) α -metil- β -izopropil- α , β - diizobutil-etilen.

5. Quyidagi alkenlarning tuzilish formulalarini yozing va ularni ratsional nomenklaturaga muvofiq nomlang: a) 2,3,5-trimetil-2-geksen; b) 2, 4, 5-trimetil-4-okten; d) 2,3,4,6-tetrametil-3-gepten; e) 4,4-diizopropil-1-okten.

6. Quyidagi uglevodorodlarni ratsional va sistematik nomenklaturaga binoan nomlang:

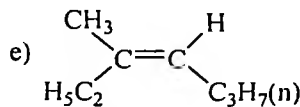
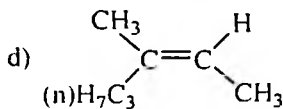
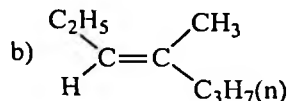
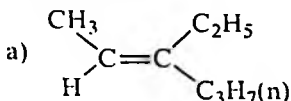


12. Quyidagi uglevodorodlarning formulalarini yozing: a) sis-3-metil-3-geksen; b) trans-2,3,4,5-tetrametil-3-geksen; d) (E)-5-metil-4-etil-4-nonen; e) (E)-2-metil-3-etil-3-geksen; f) (E)-3-metil-2-penten; g) (L)-3-metil-4-etil-3-gepten.

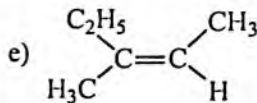
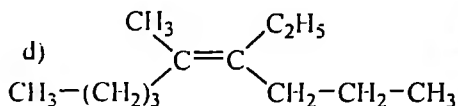
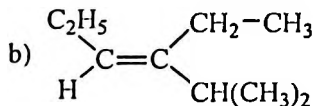
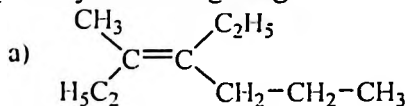
13. Asosiy zanjirda 5ta uglerod atomini saqlagan C_8H_{16} tarkibli alkennig barcha izomerlari formulasini yozing va sistematik nomenlaturaga binoan nomlang. Ularning qaysilari geometrik izomerlar holida uchrashi mumkin? Ularning formulalarini yozib, qo'shbog' holatini ko'rsatgan holda E,Z-tizim bo'yicha nomlang.

14. a) simm-diizopropiletlen; b) 2-metil - 2-penten; d) 3,4-dietil-3-geksen; e) 3-geksenning qaysilari sis- va trans-izomerlar holida uchrashi mumkin? Nima uchun? Izomerlar formulalarini yozing.

15. Quyida keltirilgan birikmalarning qaysi biri geometrik izomerlar hisoblanadi?



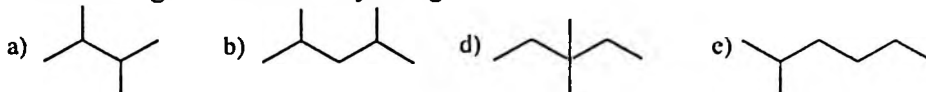
16. Quyidagi alkenlarni nomlang va ularni Z,E-tizim bo'yicha konfiguratsiyasini belgilang:



17. a) 4-metil-2-geksenning, b) 2-metil-3-geksenning geometrik izomerlari tuzilish formulalarini yozing va ularni Z, E-tizimga muvofiq nomlang

18. 2-metil-3-brom-4-nitro-3-penten va 2,4,8-trimetil-4-nonenlarning geometrik izomerlarining tuzilish formulalarini yozing va E,Z-tizimga muvofiq nomlang.

19. Uglerod zanjiri quyidagi tuzilishga ega bo'lgan izomer alkanlarning formulalarini yozing.

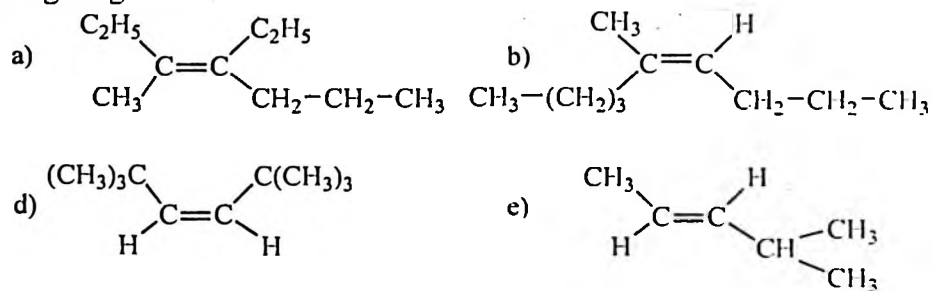


Ularni IUPAC nomenklaturasi bo'yicha nomlang. Geometrik izomerlari mavjud bo'lgan alkenlarning konfiguratsiyasini Z. E-nomenklaturaga binoan nomlang.

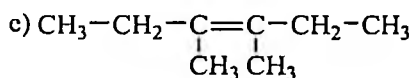
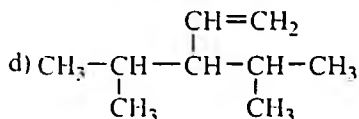
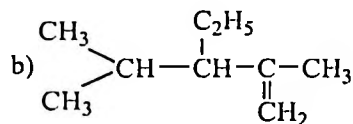
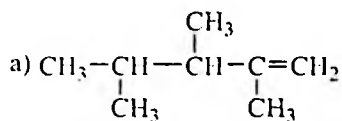
20. Quyidagi birikmalarning tuzilish formulalarini yozing.

- a) (E) penten-2;
 b) (Z) geksen-3;
 d) (Z) -3-metilpenten-2;
 e) (E)-4,4-dimetilpenten-2;

21. Quyidagi alkenlarni sistematik nomenklatura bo'yicha nomlang qo'sh bo'g'konfiguratsiyasini E,Z-nomenklaturasi bo'yicha belgilang.



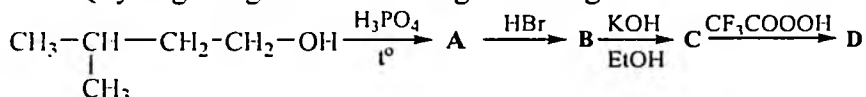
22. Quyida keltirilgan alkenlarning IUPAC nomenklaturasi bo'yicha nomlang:



Ularning qaysilari geometrik izomerlar ko‘rinishida mavjud bo‘lishi mumkin? Qo‘shbog‘ning -sis va -trans konfiguratsiya holatini ko‘rsatuvchi formularni yozing.

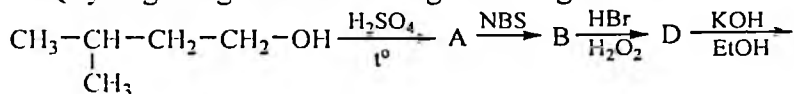
23. Quyidagi alkenlarning tuzilish formulalarini yozing: a) 2,5-dimetilgeksen-3; b) 2-etilbuten-1; d) 3,6-dimetilokten-4; e) 3,4-dietilgeksen-3. Geometrik izomerlari mavjud bo‘lgan alkenlarni ko‘rsating. Qo‘shbog‘ konfiguratsiyasini E,Z - nomenklatura belgilang.

24. Quyidagi o‘zgarishlarni amalga oshiring:



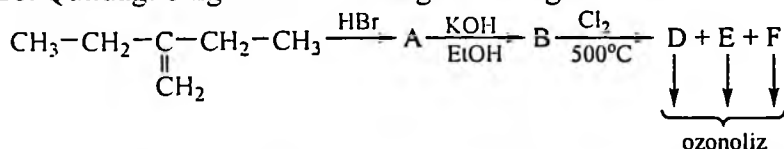
Reaksiyaning qaysi bosqichida elektrofil biriktirib olish (A_E) jarayoni boradi? Mexanizmini yozib tushuntiring.

25. Quyidagi o‘zgarishlarni amalga oshiring:



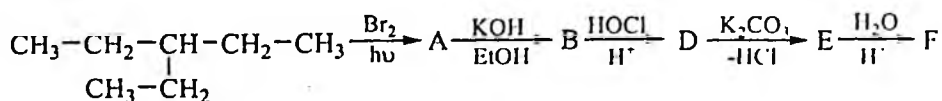
Reaksiyalarning qaysi bosqichida radikal birikish (A_r) boradi? mexanizmini ko‘rsating.

26. Qutidagi o‘zgarishlarni amalga oshiring:



Qaysi bosqichda (A_E) tipdagi reaksiya sodir bo‘ladi? Mexanizmini yozing.

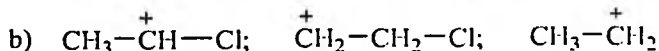
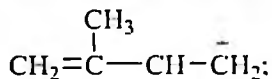
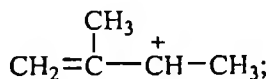
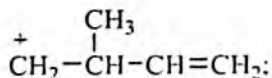
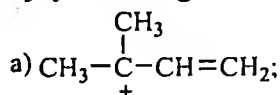
27. Qutidagi o‘zgarishlarni amalga oshiring:



Qaysi bosqichda (A_E) tipdagi reaksiya sodir bo'ladi? Mexanizmini yozing.

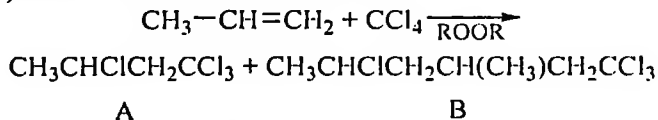
28. 2,4-dimetilpenten-2 va 2,4-dimetilpentenning brom bilan (yorug'lik ta'sirida) o'zaro ta'sirini taqqoslang. Javobingizni reaksiya tenglamalarini yozib tushuntiring.

29. Har bir holatda karbkationlarni barqarorligini oshib boorish tartibida joylashtiring:

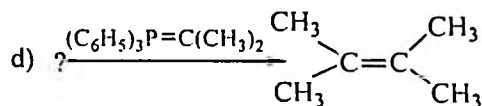
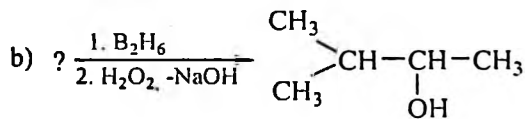
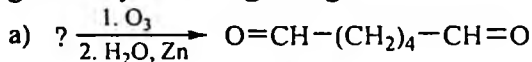


30. Izobutilen vodorod xlorid ishtirokida etilen bilan kondensirlanib, 3,3-dimetil-1-xlorbutan hosil qiladi. Ushbu reaksiyaning mexanizmini yozing.

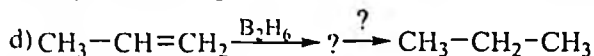
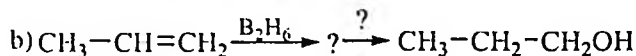
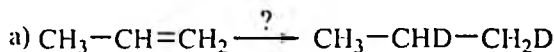
31. Alkenlarga CCl₄ ning birikishi natijasida (peroksid ishtirokida) A va B moddalar hosil bo'ladi:



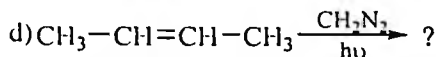
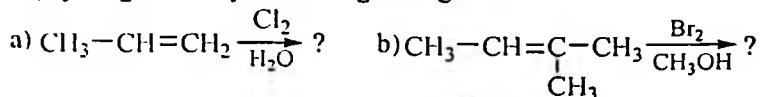
32. Quyidagi reaksiyalarni tugallang:



33. Quyidagi o'zgarishlarni amalga oshirish imkonini beradigan reaksiyalarni ko'rsating:



34. Quyidagi reaksiyalarni tugallang:



35. Quyidagi moddalarni kimyoviy jihatdan bir-biridan qanday farqlash mumkin?

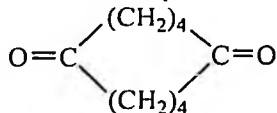
a) pentan va penten-2; b) 2-metilpenten-1 va 4-metilpenten-1; d) siklopentan va siklopenten.

36. Katalitik gidrogenlanganda 2,5-dimetilgeksan, qattiq sharoitda oksidlanganda faqat izomoy kislota hosil qiladigan alkenning tuzilish formulasini aniqlang.

37. C_6H_{12} tarkibli modda bromli suvni rangsizlantiradi, gidrogenlanganda n-geksanga aylanadi, qattiq sharoitda oksidlanganda esa ikkita karbon kislota aralashmasini hosil qiladi. Uglevodorodning tuzilishini aniqlang. Reaksiya tenglamalarini yozing.

38. C_5H_{10} tarkibli alken geometrik izomerlar ko'rinishida bo'lishi mumkin, gidrobromlanganda esa ikkilamchi alkilbromidlar aralashmasi hosil bo'ladi. C_5H_{10} tarkibli alken tuzilishini aniqlang.

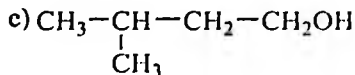
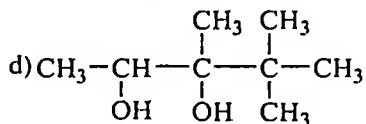
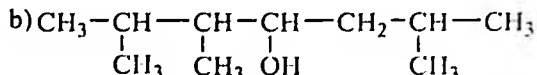
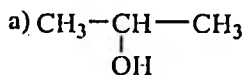
39. $\text{C}_{10}\text{H}_{16}$ tarkibli to'yinmagan uglevodorod bromli suv eritmasini rangsizlantiradi, Pt katalizatori ishtirokida gidrogenlanib, $\text{C}_{10}\text{H}_{18}$ tarkibli birikmani ozonoliz jarayonida esa simetrik tuzilishga ega bo'lgan bo'lgan diketonni hosil qiladi:



$\text{C}_{10}\text{H}_{16}$ tarkibli dastlabki moddaning tuzilishini aniqlang.

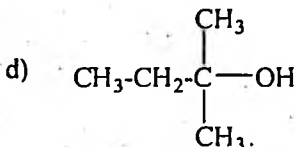
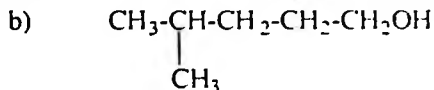
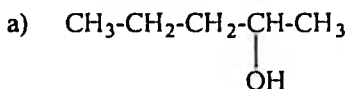
40. a) n-butanni; b) izobutanni; d) izopentanni maxsus (tanlab ta'sir qiluvchi) katalizatorlar ta'sirida qizdirish bilan degidrogenlaganda qanday alkenlar hosil bo'ladi? Bu reaksiyalar tenglamalarini yozing.

41.



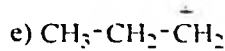
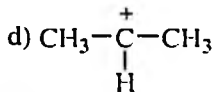
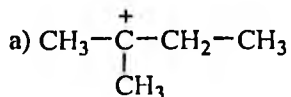
Spirtlar sulfat kislota katalizatorligida degidratlanganda asosan qanday alkenlar hosil bo'ladi? Bu reaksiyalarning tenglamalarini yozing, qanday oraliq mahsulotlar hosil bo'lishini ko'rsating. Qaysi spirtlarning degidratlanishi Zaysev qoidasiga asosan boradi?

42. Quyidagi spirtlarni oson degidratlanish tartibida joylashtiring:



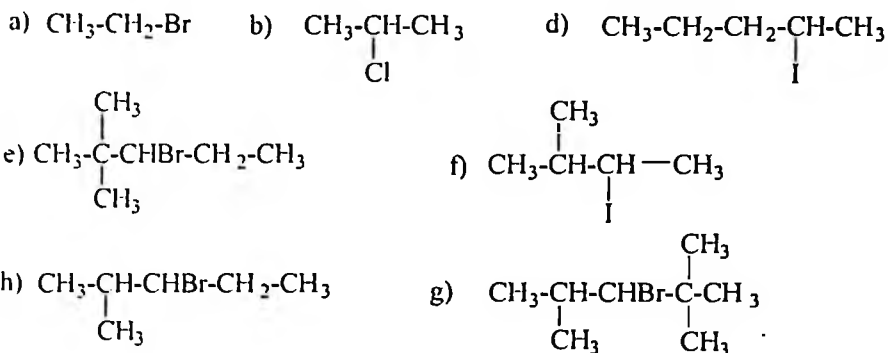
Bu degidratlanish reaksiyalarining tezligi nimalarga bog'liq? Javobingizni reaksiyalar mexanizmini yozib, hosil bo'ladigan karbokationlar va alkenlar barqarorligini taqqoslash bilan asoslang.

43.



karbokationlarni: a) oson hosil bo'lishi; b) barqarorligining oshib borishi tartibida joylashtiring.

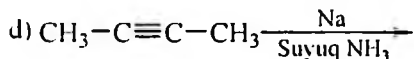
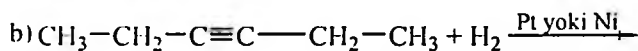
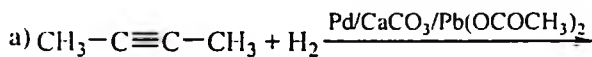
44.



Alkilgalogenidlar KOH yoki NaOH ning spirtidagi eritmasi bilan qizdirilganda asosiy mahsulot sifatida qanday alkenlar hosil bo'ladi?

45. a) etilen; b) 2-penten; d) 2-metil-2-penten; e) 3-metil-1-gekenni oish uchun qaysi vitsinal digalogenidlar Zn kukuni bilan qizdirilishi kerak? Bu reaksiyalarning tenglamalarini yozing.

46.



Qisman gidrogenlanishdan alkenlarning qanday geometric izomerlari hosil bo'ladi?

47. To'rt xil usul bilan propilen oling. Tegishli reaksiyalar tenglamalarini yozing.

48. 300 g n-butyl bromid KOH ning spirtidagi eritmasi bilan qizdirilganda 12 l (n.sh.da) 1-buten hosil bo'ladi. Nazariy unumga nisbatan reaksiyaning unumi necha foizni tashkil qilishini hisoblang.

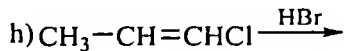
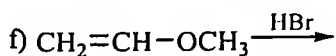
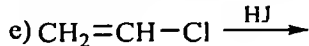
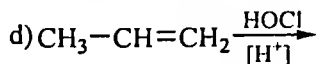
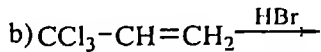
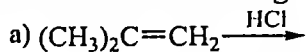
49. 2,8 l propilen (n.sh.da) olish uchun necha gramm izopropil spirtini degidratlash kerak?

50. Alkenlarni gidrogenlashda qaytaruvchilar sifatida qanday moddalar ishlatiladi?

51. 2,4,4-trimetil-1-penten bilan 2,4,4-trimetil-2-penten aralashmasini katalitil gidrogenlaganda qanday alkan hosil bo'ladi?

52. a) izobutilenni; b) 3-metil-1-pentenni bromning tetraxlorometandagi eritmasi va bromning suvdagi eritmasi bilan bromlaganda qanday birikmalar hosil bo'ladi?

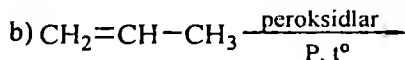
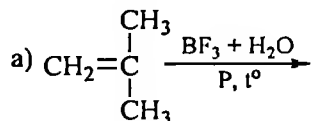
53. Quyidagi reaksiyalarni oxirigacha yetkazing va ularning mexanizmini tushuntiring:



54. a) 1-penten; b) 2-metil-2-penten; d) metiletilizoamilvinilmetan; e) dimetilizobutilallilmetanga peroksid ishtirokida HBr ta'sir ettirilganda boradigan reaksiya tenglamalarini yozing.

55. a) izobutilen; b) α -metil- α,β -diizopropiletlen; d) 1-gepten; e) 2-metil-2-butenga oldin sulfat kislota, so'ngra suv ta'sir ettirilganda boradigan reaksiya tenglamalarini yozing.

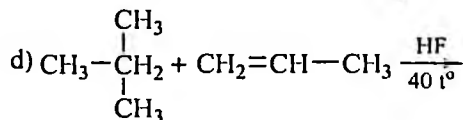
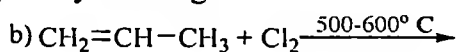
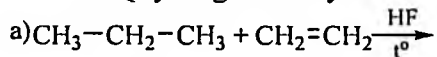
56.



Reaksiyalarni oxirigacha yetkazing va ularni mexanizmlarini keltiring.

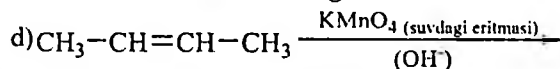
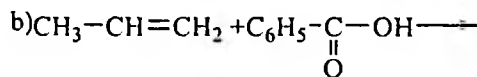
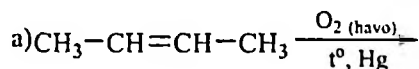
57. Izobutilenning sulfat kislota ishtirokida dimerlanish va trimerlanish reaksiyalari tenglamalarini yozing.

58. Quyidagi reaksiyalarni oxirigacha yetkazing:



b- reaksiya mexanizmini keltiring.

59.



reaksiya tenglamalarini yozing. d- reaksiya mexanizmini keltiring.

60. Quyidagi alkenlar ozonoliz qilinganda qanday birikmalar hosil bo'ladi:

a) 2-penten; b) 2-metil-1-buten; d) 3-metil-1-buten; e) 2-metil-2-buten.

61. C_8H_{16} uglevodorod brom eritmasini rangsizlantiradi, konsentrlangan sulfat kislotada eriydi, katalitik gidrogenlash natijasida 2,5-dimetilpentanga aylanadi, xromli aralashma bilan oksidlanganda esa izomoy kislotaga $(\text{CH}_3)_2\text{CHCOOH}$ ni hosil qiladi. Uglevodorodning tuzilishini aniqlang.

62. 7 g alken 16 g bronni biriktiradi. Uglevodorodning molekulyar masasi topilin.

63. Alkenlarning IR- spektrlarida $\text{C} = \text{C}$ va $\text{C}-\text{H}$ valent va deformatsion tebranishlari kaysi soxalarda kuzatiladi?

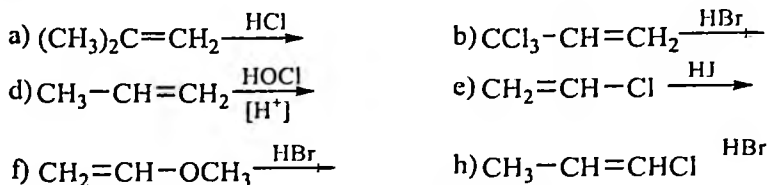
64. C_6H_{12} uglevodorodning IR- spektrida 3045 va 1650 cm^{-1} coxa- da yutilish bor. Uning ozonolizidan uglerod atomlari soni teng bul- gan aldegid va keton hosil buladi. Uglevodorodning tuzilishini aniqlang.

65. PMR spektrida ikkita singlet ($\delta = 1,70$ va $4,60$ m.h.) ni saqlagan C_4H_8 , tarkibli alkenning tuzilishini aniqlang.

66. Propilenga peroksid ishtirokida HBr birikishidan qanday birikma hosil bo'ladi? Reaksiya mexanizmini keltiring. HCl va HJ shunday reaksiyaga kirisha oladimi? Sababini tushuntiring.

67. Quyidagi sharoitlarda propilenning xlor bilan reaksiyasini yozing: a) qutblangan erituvchi, 20°C ; b) gaz fazada, yorug'lik ta'sirida, 200° dan past haroratda; d) gaz fazada, 500° haroratda. Nima uchun propilen sharoitga qarab xlor bilan har xil reaksiyaga kirishadi? Reaksiyalarning mexanizmini keltiring.

68. Quyidagi reaksiyalarning qaysilarida asosan elektrofil biriktirish reaksiyalari sodir bo'ladi? Reaksiyaning asosiy mahsulotlarini ko'rsating.



69. Propilen va noorganik reagentlardan a) 2-propanol; b) 1-propanol; d) propandiol-1,2; e) geksan; f) 2,3-dimetil-dibrombutan hosil bo'lish reaksiya tenglamalarini yozing.

70. Etilen hosil bo'ladigan uchtadan kam bo'lmagan reaksiyalarning tenglamalarini keltiring. Bu reaksiyalarning sharoitlarini ko'rsating.

71. To'rt xil usul bilan propilen oling. Tegishli reaksiya tenglamalarini yozing.

72. Degidrogalogenlash orqali qanday uglevodorodlarni olish mumkin: a) 2-metil-2-xlorbutan, b) 2-metil-3-xlorbutan,

73. 12,5 ml absolyut etil spirtini (zichligi 0,8 g / sm³) suvsizlantirishda 3 litr etilen olindi. Etilen unumini hisoblang (nazariy%).

74. 0,1 mol ochiq zanjirli uglevodorodning to'liq yonishi natijasida 5,4 ml suv hosil bo'ladi va 8,96 l (n.a.) uglerod oksidi (IV) ajralib chiqadi. Ushbu uglevodorod teng miqdordagi xlor bilan o'zaro ta'sirlashganda, asosan, zanjirning oxirida xlor atomlari bo'lgan nosimmetrik tuzilishdagi dixloralken hosil bo'ladi. Ochiq zanjirli uglevodorodning tuzilishini aniqlang,

72. C₄H₈ tarkibli tarmoqlangan zanjirli uglerod skeletiga ega bo'lgan uglevodorodning polimerlanish reaksiyasi tenglamasini yozing.

76. 5,6 l (n.sh) etilenning brom bilan ta'sirlashuvidan 42,3 g 1,2-dibrometan olingan bo'lsa, mahsulot unumini toping.

77. 10 litr kisloroddan foydalanib atsetaldegid olish uchun necha litr etilenni oksidlash mumkin? Gazlar bir xil sharoitda o'lchangan.

78. 10 l etilen va propaning aralashmasiga 10 l vodorod qo'shib katalizator ustidan o'tkazildi. Bunda aralashmaning hajmi 16 l gacha kamaydi. Boshlang'ich aralashmadagi propaning hajmiy ulushini toping.

79. Geliyga nisbatan zichligi 3,2 ga teng buten-2 bilan vodorodning aralashmasi nikel katalizatori ustidan o'tkazilganda

gazlar aralashmasining geliyga nisbatan zichligi 3,55 ga tenglashdi. Reaksiyaning unumini toping.

80. 50 g 32,% li bromid kislota eritmasiga ma'lum miqdorda izopropilamin qo'shildi. Olingan eritma orqali gaz yutilishi to'xtaguncha propen o'tkazildi. Bunda eritmaning massasi 60,1 g ga tenglashdi. Yutilgan gazning normal sharoitdagi hajmini toping.

81. Vodородga nisbatan zichligi 21 bo'lgan 11,2 l (n.sh.) izomer uglevodorodlar aralashmasi bromli suv bilan ta'sirlashuvi natijasida 40,4 g dibromli hosila olingan. Bu uglevodorodlarning tuzilishi va ularning hajmiy ulushlarini toping.

82. 67,2 ml (n.sh.) propen va butan aralashmasining geliyga nisbatan zichligi 13,17 ga teng. Aralashma nurdan himoya qilingan idishda 12 g 3% li bromning benzoldagi eritmasi orqali o'tkazildi. Hosil bo'lgan eritmadagi moddalarning massa ulushlarini toping.

83. Quyidagi moddalar:

a) propen va xlor;

b) penten-2 va kaliy permanganat;

d) penten-2 va suv orasida reaksiya borish - bormasligini ko'rsating.

84. 3,4-dimetil-1-pentenni gidratlash reaksiya tenglamasini yozing. Ushbu reaksiya qanday sharoitlarda sodir bo'ladi?

85. 1-butenning quyidagi sharoitlarda gidrogenlanish tenglamalarini yozing:

a) $H_2[Pt]$; b) $H_2[Reniy\ Ni]$; d) $NH_2-NH_2 [H_2O_2, CuCl_2]$;

e) B_2H_6 so'ngra CH_3COOH ; f) $H_2[RhCl_3+(C_6H_5)_3P, benzol]$.

Geterogen va gomogen katalitik gidrogenlash, gidroborlash iboralari haqida tushuncha bering.

86. Quyidagi alkenlar ozonoliz qilinganda qanday birikmalar hosil bo'ladi? a) 2-penten; b) 2-metil-1-buten; v) 3-metil-1-buten

87. Tarmoqlangan zanjirli uglevodorod birinchi uglerod atomida qo'shbog' saqlaydi. Shu alkenning 0,84 grammi 1,6 g bromni biriktiradi. Alkenning formulasini aniqlab, nomlang.

88. 7 g etilen qatori uglevodorodi 2,24 l (n.sh.) vodorod bromidni biriktiradi. Bu uglevodorod sis-izomer bo'lsa, uning molyar massasi va tuzilishi formulasini yozing.

89. To'rtta to'yinmagan uglevodorod bir xil tarkib: 85,7% uglerod va 14,3% vodoroddan tashkil topgan. Bu uglevodorodlarning havoga nisbatan zichliklari tegishli 0,97; 1,45; 1,93 va 2,41 ga teng bo'lsa, ularning formulalarini toping.

90. Uglevodorod kaliy permanganatning suvli eritmasi bilan sovuqda reaksiyaga kirishib, simmetrik tuzilishga ega birikma hosil qiladi. Dastlabki uglevodorodning tuzilishini aniqlang.

91. Gazlar aralashmasi bir xil molekulyar massaga bo'lgan to'yingan va to'yinmagan uglevodorodlar aralashmasidan iborat. Bu aralashmaning geliyga nisbatan zichligi 14 ga teng. Uglevodorodlarning molekulyar formulasini topib, har qaysining uchtadan kam bo'lmagan izomerlarini keltiring va ularni xalqaro nomenklatura bo'yicha nomlang.

92. X uglevodorod mo'l miqdordagi bromli suv ta'sirida 57,5% brom saqlagan dibromli hosila, sulfat kislota ishtirokida kaliy permanganat bilan qaynatilsa, ikkita bir asosli karbon kislota hosil qiladi. X uglevodorodning molekulyar va tuzilish formulalarini aniqlang.

93. Etilen uglevodorodi bilan vodorodning 13,44 l (n.sh) aralashmasi 200 °C da platina katalizator ustidan o'tkazildi. Reaksiya 75% unum bilan borib, aralashmaning hajmi 10,08 l gacha kamaydi. Boshlang'ich aralashma bromli suv orqali o'tkazilganda bromli suv solingan sklyankaning massasi 8,4 g ga ortdi. Boshlang'ich aralashmaning tarkibini (hajm bo'yicha) va alkenning tuzilishini toping.

94. Etilen uglevodorodi qorong'ida xlor bilan ta'sirlashganda 42,3 g dixlorid hosil bo'lib, shunday miqdori bromning tetraxlorometandagi eritmasi bilan ta'sirlashsa 69 g dibromalkan hosil bo'ladi. Dastlabki uglevodorodning tuzilish formulasini toping.

95. A uglevodorod havodan og'ir bo'lib, degidrogenlanganda havodan yengil B birikma hosil bo'ladi. B birikma ma'lum sharoitda tarkibi avvalgiday bo'lgan, ammo vodorod xlorid bilan reaksiyaga kirishmasligi tufayli farq qiladigan C birikmaga aylanadi. A,B,C moddalarning formulalarini keltiring. Reaksiyalarning tenglamalarini yozing.

96. Polimerlanish reaksiyasiga kirisha oladigan A uglevodorod mo'l miqdordagi brom bilan $C_5H_8Br_4$ tarkibli modda, gidrogenlanganda esa, tarmoqlangan zanjirli C_5H_{12} tarkibli

uglevodorodga aylanadi. A moddaning nomini aytib, reaksiyalarning tenglamalarini yozing.

97. Qaysi misollarda Markovnikov qoidasi buziladi? Ikkitadan kam bo'lmagan misol keltiring.

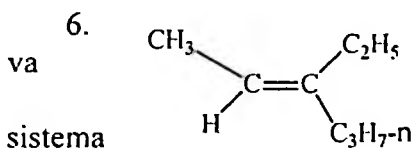
98. Noma'lum tuzilishga ega bo'lgan 1 mol alkilyodidga kaliy gidroksidning spirtidagi eritmasi ta'sir ettirilib, massa nisbati 1:7 bo'lgan ikki xil izomer alkenlar olindi. Reaksiyada olingan asosiy mahsulotning massasi 49 g ga teng bo'lib chiqdi. Boshlang'ich moddalar va reaksiya mahsulotlarning tuzilishini aniqlang.

99. Ikki halqali bo'lmagan uglevodorodlar bittadan qo'sh bog' saqlaydi. Ularning molyar massalari nisbati 1:2 ga teng. Ular to'liq gidrogenlangandan keyin molyar massalarining nisbati 0,5172 ga teng bo'ldi. Bular qaysi uglevodorodlar?

100. Havodan yengil A uglevodorod gidrogenlanganda havodan og'ir B birikma hosil bo'ladi. B modda xlor bilan o'rin olish reaksiyasiga kirishib, oson suyuqlikga aylanadigan va shu sababli meditsinada anesteziyada ishlatiladigan C gazni hosil qiladi. A,B,C moddalarning formulalarini toping. Reaksiyalarning tenglamalarini yozing.

101. A modda o'ziga xos hidli rangsiz suyuqlik bo'lib, suvdan yengil va unda yaxshi eriydi. Bu modda konsentrlangan sulfat kislota qo'shib qizdirilsa, havodan yengil gaz hosil bo'ladi va vodorod bromid bilan ojir suyuqlik S ni hosil qiladi. A,B,C moddalarning formulalarini toping va reaksiyalarning tenglamalarini yozing.

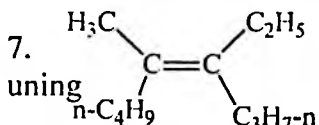
102. 0,1 mol noma'lum organik modda kislotali muhitda kaliy permanganat bilan oksidlanganda 4,48 l (n.sh.) karbonat angidrid va 36,24 g $MnSO_4$, 20,88 g K_2SO_4 va suv hosil bo'ldi. Qaysi modda oksidlangan? Bu moddaning eng yaqin gomologining kaliy permanganat suvli eritmasi bilan oksidlanishining reaksiyasi tenglamasini yozing.



va sistema

tuzilishli alkenning nomini ayting uning konfiguratsiyasini E,Z- (nomenklatura) bo'yicha

- belgilang.
- A) (Z)-3-etil-3-geksen B) (E)-3-etil-3-geksen
 C) (Z)-3-etil-2-geksen D) E-3-etil-2-geksen
 1, q.1, c.366-367.; 4. 86-87-b.; 6, 25-26-b.



uning bo'yicha

tuzilishli alkenning nomini ayting va konfiguratsiyasini E, Z-sistema

belgilang.

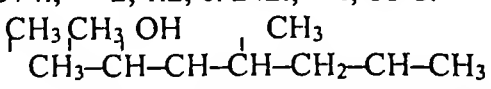
- A) (E)-5-metil-4-etil-4-nonen B) (E)-4-etil-5-metil -4-nonen
 C) (Z)-5-metil-4-etil-4-nonen D) (Z)-4-etil-5-metil -4-nonen
 1, q.1, c.366-367.; 4, 86-87-b.; 6, 25-26-b.

8. n-butanni maxsus katalizator (Cr₂O₃) ishtirokida 450°C gacha qizdirish bilan degidrogenlaganda qanday alken (yoki alkenlar) hosil bo'ladi?

- A) propilen B) faqat 1-buten
 C) faqat 2-buten D) 1-buten va 2-buten aralashmasi
 2, t.I, c. 239

9. 2-butinni katalizator (Pd/BaSO₄; xinolin) ishtirokida 0-20°C qisman (selektiv) gidrogenlash natijasida qaysi alkenning geometrik izomeri (yoki izomerlari) hosil bo'ladi?

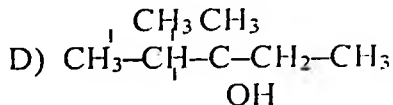
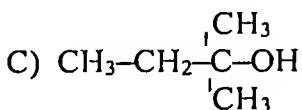
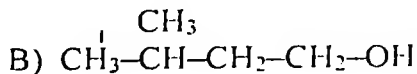
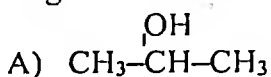
- A) faqat sis-2-buten B) faqat trans-2-buten
 C) sis-2-buten va trans-2-buten aralashmasi D) 2-metilpropen
 1, q.1, c.374.; 2, t.2, c. 242.; 4, 88-b.

10.  tuzilishli spirt konsentrlangan sulfat kislotasi katalizatorligida degidratlanganda asosiy mahsulot sifatida qanday alken hosil bo'ladi?

- A) 2,5,6-trimetil-3-gepten B) 2,3,6-trimetil-3-gepten
 C) 2,5,6-trimetil-3-gepten va 2,3,6-trimetil-3-gepten aralashmasi

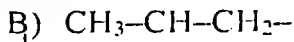
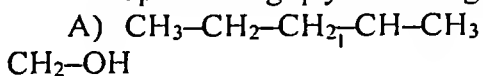
D) 2,5,6-trimetil-2-gepten
2, т.1, с. 240.; 15, с. 158-159.

11. Spirtlardan qaysi birining degidratlanishi A.M. Zaytsev qoidasiga asosan boradi?



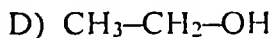
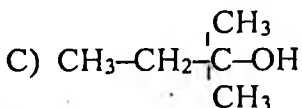
2, т.2, с. 34-35.

12. Spirtlarning qaysi biri eng oson degidratlanadi?



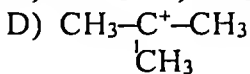
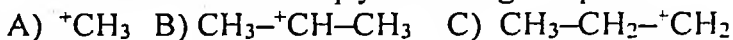
OH

CH₃



4, 188-b.; 6, 37-b.

13. Karbokationlardan qaysi biri eng barqaror?



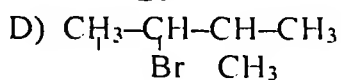
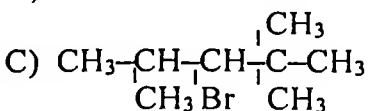
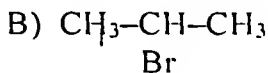
6, 37-b.; 15, с. 162-165.

14. Karbokationlardagi musbat zaryadlangan uglerod atomi qanday gibridlanish holatida bo'ladi?



6, 38-b.

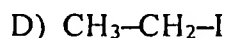
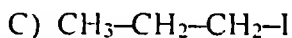
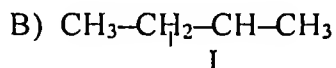
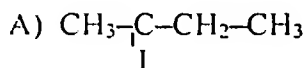
15. Alkilgalogenidlardan qaysi birining degidrogalogenlanishi A.M.Zaytsev qoidasiga asosan boradi?



2, т.2, с.241.; 8, с. 83.

16. Alkilgalogenidlarning qaysi biri eng oson degidrogalogenlanadi?





15. c. 157-158.

17. Karbonilli birikmalarga ilid $(\text{C}_6\text{H}_5)_3\text{P}=\text{CRR}^1$ ta'sir ettirib, alkenlarni sintezlash kimning reaksiyasi deb yuritiladi?

A) A.N. Nesmeyanov

B) G. Wittig

C) G. Vudvord

D) P. Karrer

4. 89-b.

18. *m*-moy aldegid bilan $(\text{C}_6\text{H}_5)_3\text{P}=\text{C}(\text{CH}_3)-\text{CH}_2-\text{CH}_3$ reaksiyaga kirishganda qanday alken hosil bo'ladi?

A) 3-metil-2-gepten

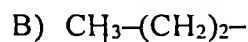
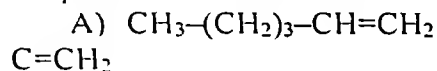
B) 3-metil-1-gepten

C) 3-metil-3-gepten

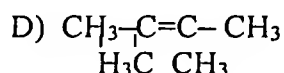
D) 2-metil-1-gepten

4. 89-b.

19. C_6H_{12} tarkibli izomer alkenlarning qaysi biri nisbatan eng barqaror?



CH₃



2. T.1, c.276-277.

20. Izobutilenga bromning tetraxlormetandagi eritmasini ta'sir ettirganda qanday organik birikma hosil bo'ladi?

A) 3-brom-2-metil-1-propen
propen

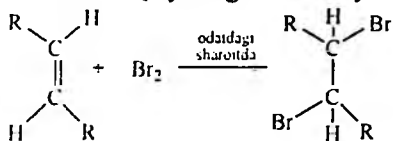
B) 2-brom-2-metil-1-

C) 1,2-dibrom-2-metilpropan

D) 1-brom-2-metilpropan

2, T.2, c. 247.; 4, 92-93-b. 15, 179-180-b.

21. Quyidagi reaksiya qanday mexanizm bo'yicha boradi?



A) A_N

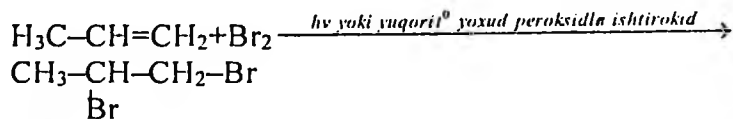
B) A_E

C) A_R

D) S_R

4. 92-93-b.

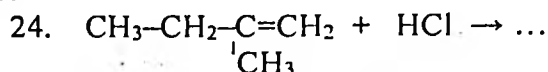
22. Quyidagi reaksiya qanday mexanizm bo'yicha boradi?



- A) A_N B) A_E C) A_R D) S_K
4, 93-b.

23. Nosimmetrik alkenlarga peroksidlar ishtirokida H-elektrofillardan qaysi birining birikishi V.V. Markovnikov qoidasiga teskari boradi?

- A) H⁺OH⁻ B) H⁺OSO₂-OH C) H⁺I⁻ D) H⁺Br⁻

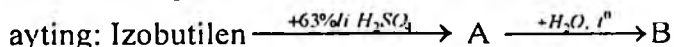


Reaksiya asosiy mahsulotining nomini ayting.

- A) 2-metil-2-xlorbutan B) 2-metil-1-xlorbutan
C) 2-metil-3-xlorbutan D) 2-metil-4-xlorbutan

4, 94-b.

25. O'zgarishlarni amalga oshiring va oxirgi mahsulotning nomini



- A) n-butil spirt B) izobutil spirt
C) ikkilamchibutil spirt D) uchlamchibutil spirt

4, 95-b.; 15, c. 183-184.

26. Tuzilishi noma'lum alkenni xromli aralashma bilan oksidlaganda

atseton $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$ va izomoy kislota $\text{CH}_3-\overset{\text{CH}_3}{\text{CH}}-\text{COOH}$ hosil bo'ldi. Oksidlangan alkenning tuzilishini aniqlang va uni sistematik nomenklaturaga binoan nomlang.

- A) 2,4-dimetil-1-penten B) 3,4-dimetil-1-penten
C) 2,3-dimetil-2-penten D) 2,4-dimetil-2-penten

4, 99-b.

27. Tuzilishi noma'lum alkenni CrO₃ bilan sirka kislota eritmasida oksidlaganda metilizopropilketon $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}-\text{CH}_3$ va propion kislota



C₂H₅COOH hosil bo'ldi. Oksidlangan alkeni nomlang.

- A) 2,3-dimetil-2-geksen B) 2,3-dimetil-3-geksen
C) 2,4-dimetil-1-geksen D) 2,4-dimetil-2-geksen

3. 116-b.

28. Tuzilishi noma'lum alkenning ozonidi suv bilan parchalanganda atseton $\text{CH}_3\text{-C-CH}_3$ va *n*-moy aldegid $n\text{-C}_3\text{H}_7\text{-CHO}$ hosil bo'ldi.

O

Alkenning tuzilishini aniqlang va uni nomlang.

- A) 2-metil-1-geksen B) 3-metil-1-geksen
C) 2-metil-2-geksen D) 2-metil-3-geksen

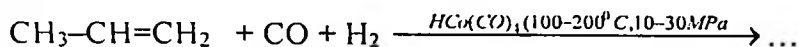
4. 99-100-b.

29. N.A. Prilejyev reaksiyasi bo'yicha alkenlardan epoksidlarni olish uchun oksidlovchi sifatida qanday modda(lar) ishlatiladi?

- A) 65% li HNO_3 B) CrO_3 + suvsiz CH_3COOH
C) $\text{K}_2\text{Cr}_2\text{O}_7$ + kons. H_2SO_4 D) $\text{C}_6\text{H}_5\text{-COOOH}$

4. 98-b.

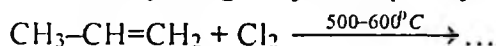
30. Reaksiya natijasida qanday modda yoki moddalar hosil bo'ladi?



- A) faqat *n*-moy aldegid B) *n*-moy va izomoy aldegidlar
C) faqat izomoy aldegid D) metiletilketon

3. 115-b.

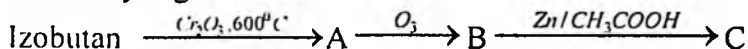
31. Reaksiyaning natijasida qanday modda hosil bo'ladi?



- A) 1,2-dixlorpropan B) 2,2-dixlorpropan
C) 1,1-dixlorpropan D) allil xlorid (3-xlorpropen-1)

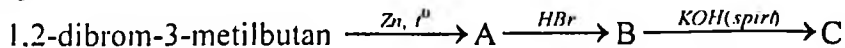
4. 105-106-b.

32. O'zgarishlarni amalga oshiring. Oxirgi (C) mahsulotning nomini ayting:



- A) 2 mol sirka aldegid B) 2 mol chumoli aldegid
C) chumoli va sirka aldegid D) atseton va chumoli aldegid

33. O'zgarishlarni amalga oshiring. Oxirgi mahsulotning nomini ayting.



- A) 2-metil-2-buten B) 3-metil-1-buten
 C) 2-metil-1-buten D) 2,2-dimetil-1-propen

34. C_5H_{10} tarkibli birikma katalitik gidrogenlanganda 2-metilbutanni hosil qildi. C_5H_{10} ga peroksid ishtirokida vodorod bromid ta'sir ettirib, olingan mahsulot natriy bilan qizdirilsa 2.7-dimetiloktan hosil bo'ladi. C_5H_{10} tarkibli birikmaning tuzilishini aniqlang.

- A) 2-metil-1-buten B) 2-metil-2-buten
 C) 3-metil-1-buten D) 2.2-dimetil-1-propen

35. C_8H_{16} tarkibli uglevodorod brom eritmasini rangsizlantiradi. kontsentrangan sulfat kislotada eriydi, katalitik gidrogenlanganda 2.5-dimetilgeksanga aylanadi, xromli aralashma bilan oksidlanganda esa. izomoy kislota $(CH_3)_2CH-COOH$ hosil bo'ladi. Uglevodorodning tuzilishini aniqlang.

- A) 2,5-dimetil-1-geksen B) 2,5-dimetil-2-geksen
 C) 2,5-dimetil-3-geksen D) 2,4-dimetil-3-geksen

36. 7 g alken 16 g bromni biriktira oladi. Uglevodorodning molekulyar massasi topilsin.

- A) 50 B) 60 C) 70 D) 80

37. Alkenlarning IQ-spektrlarida $C=C$ va $C_{sp^2}-H$ bog'larining valent tebranishlari qaysi sohalarda kuzatiladi?

- A) $\nu_{C=C}$ 1620-1680 sm^{-1} va ν_{CH} 3010-3095 sm^{-1}
 B) $\nu_{C=C}$ 1700-1750 sm^{-1} va ν_{CH} 3120-3250 sm^{-1}
 C) $\nu_{C=C}$ 1780-1795 sm^{-1} va ν_{CH} 3180-3195 sm^{-1}
 D) $\nu_{C=C}$ 1820-1835 sm^{-1} va ν_{CH} 3250-3272 sm^{-1}

11, 234-b.

38. $R-CH=CH-R$ tipidagi alkenlarning IQ-spektrlarida $C_{sp^2}-H$ bog'ining deformatsion tebranishlari sis- va trans-izomerlar uchun qaysi sohalarda kuzatiladi?

- A) δ_{CH} 770-795 sm^{-1} (sis-) δ_{CH} 990-1010 sm^{-1} (trans-);
 B) δ_{CH} 810-825 sm^{-1} (sis-) δ_{CH} 1020-1032 sm^{-1} (trans-);
 C) δ_{CH} 835-850 sm^{-1} (sis-) δ_{CH} 1050-1060 sm^{-1} (trans-);
 D) δ_{CH} 650-750 sm^{-1} (sis-) δ_{CH} 960-970 sm^{-1} (trans-);

17, 38-b.

39. Alkenlarning UB-(ultrabinafsha)-spektrlarida yutilish maksimumi qaysi sohalarda kuzatiladi?

A) 180-200 nm B) 205-210 nm C) 212-214 nm D) 215-218 nm

3. 108-109-b.

40. PMR-spektrlarida =CH– olefin protonlari uchun xarakterli signallar qaysi maydonda yotadi?

A) δ 6,2-8,0 m.h.; B) δ 4,5-6,0 m.h.; C) δ 2-3 m.h.; D) δ 1,3 m.h.:

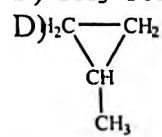
3. 109-b.

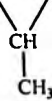
41. PMR-spektrida ikkita singlet (δ 1,70 va δ 4,60 m.h.) saqlagan C_4H_8 tarkibli alkenning tuzilishini aniqlang.

A) $CH_2=CH-CH_2-CH_3$

B) $CH_3-CH=CH-CH_3$

C) $CH_3-C(CH_3)=CH_2$

D) 



42. Alkenlar UB-nurlanishni qaysi sohada yutadi?

A) 210-220 nm B) 225-235 nm C) 165-200 nm D) 145-150 nm

8. c. 84

43. Trans-alkenlar IQ-spektrlarida C–H bog` uchun deformatsion tebranishlar qaysi sohada kuzatiladi?

A) 850 cm^{-1} B) 875 cm^{-1} C) 915 cm^{-1} D) 965 cm^{-1}

8. c. 84

44. Sis-alkenlar IQ-spektrlarida C–H bog` uchun deformatsion tebranishlar qaysi sohada kuzatiladi?

A) 750 cm^{-1} B) 700 cm^{-1} C) 800 cm^{-1} D) 850 cm^{-1}

8. c. 84

45. C_6H_{12} tarkibli uglevodorodning IQ-spektrida 3045 va 1650 cm^{-1} sohalarda tebranishlar bor. Bu birikmani ozonoliz qilinganda molekulasidagi uglerod atomlari soni teng bo`lgan aldegid va keton hosil bo`ladi. C_6H_{12} uglevodorodning tuzilishini aniqlang va uni nomlang.

A) 2-metilpenten-1

B) 3-metilpenten-1

C) 2-metilpenten-2

D) 3-metilpenten-2

17. c. 68

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	B	16	A	31	D
2	D	17	B	32	D
3	D	18	C	33	A
4	B	19	D	34	C
5	B	20	C	35	C
6	D	21	B	36	C
7	C	22	C	37	A
8	D	23	D	38	D
9	A	24	A	39	A
10	B	25	D	40	B
11	D	26	D	41	C
12	C	27	B	42	C
13	D	28	C	43	D
14	B	29	D	44	B
15	D	30	B	45	B

III BOB. ALKADIYENLAR

Alkadiyenlarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalriga oid masala va mashqlar

1. Allen va 1,4-pentadiyen molekularining elektron formulalarini yozing. Har bir uglerod atomining gibridlanish holati va C-C, C=C va C-H bog'larning orbitallarning qoplanishidan hosil bo'lganligini ko'rsating.

2. 1,3-butadiyen molekulasining elektron tuzilishi misolida bog' tartibi, erkin valentlik indeksi, rezonans struktura, mezomer struktura va mezomer effekt tushunchalarining mohiyatini ochib bering.

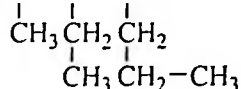
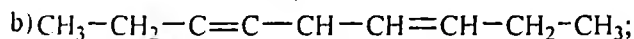
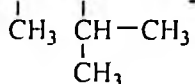
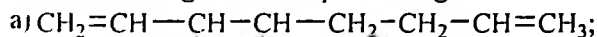
3. 1,3-butadiyenning molekulyar diagrammasini chizing. Bog' tartibi (uglerod atomlari orasidagilent bog'lar soni) etanda 1 ga, etilenda 2 ga, atsetilenda 3 ga teng bo'lgani holda nega 1,3-butadiyenda kasr songa teng?

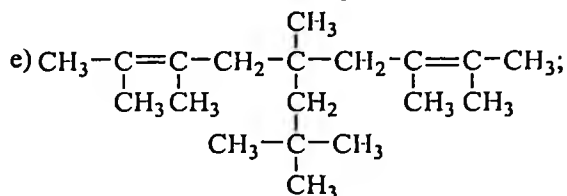
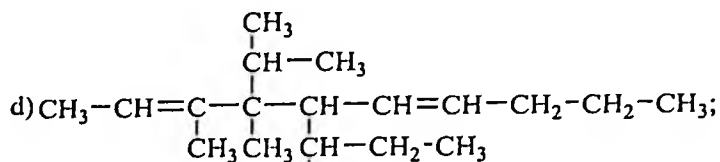
4. Nega 1,3-pentadiyen molekulasini 1,4-pentadiyengacha nisbatan barqaror? Javobingizni ikkala diyenning mezomeriya energiyasi va gidrogenlanish issiqliklarini taqqoslash bilan asoslang.

5. a) simm-vinilbutiletlen; b) nosimm-metilalliletlen; d) diizokrotilmetan; e) izopropeniletlen; f) simm-vinilizobutiletlen; g) α,β -dimetil- α -etil- β -alliletlen; h) α,β -dimetil- α,β -dietil- α -allil- β -izokrotiltanning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga ko'ra nomlang.

6. a) 2,4-dimetil-1,3-geksadiyen; b) 4-metil-1,3-geksadiyen; d) 2,4,5,5-tetrametil-1,3-geksadiyen; e) 8-metil-4,5-dietil-2,4-nonadiyen; j) 4,4,5,5-tetrametil-1,6-oktadiyen; f) 3-metil-3-etil-1,5-geksadiyenning tuzilish formulalarini yozing va ularni ratsional nomenklaturaga binoan nomlang.

7. Quyidagi to'yinmagan uglevodorodlarni sistematik nomenklaturaga muvofiq nomlang.





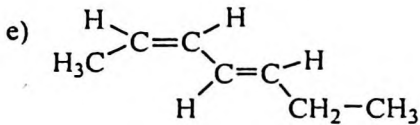
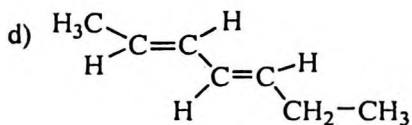
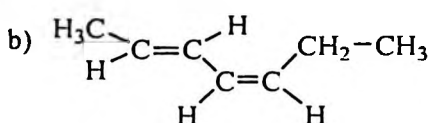
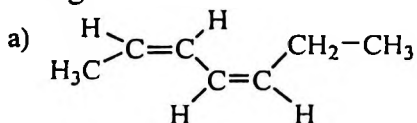
8. C_5H_8 tarkibli izomer diyenlar va alkinlarning tuzilish formulalarini yozing.

9. Bosh zanjirida 5ta uglerod atomi bor C_7H_{12} tarkibli izomer diyen uglevodorodlarning tuzilish formulalarini yozing va ularni sistematik nomenklatura bo'yicha nomlang.

10. Quyidagi birikmalarning tuzilish formulalarini yozing: a) (L,L)-2,4-geksadien, b) (E,E)-2,4-geksadiyen, v) (E,L)-2,4-geksadiyen.

Bular orasida qaysilari bir xilligini ko'rsating.

11. Quyidagi birikmalarni L,E va sis, trans tizimi bo'yicha nomlang:



12. Quyidagi moddalarning tuzilish formulalarini yozing: a) butadiyen-1,2;

b) oktadiyen-1,4; d) 2-metilpentadiyen-2,4; e) 3-metil-3-vinilpentadiyen-1,4; f) 3-etiniloktadiyen-1,4; g) oktadiyen-1,7-in-4; h) geksadiyen-1,3; i) divinilatsetilen; j) diallil; k) izopren; l) diizopropenil.

13. Quyidagi moddalarni nomlang: a) $\text{CH}_2 = \text{C}(\text{CH}_3)\text{CH} = \text{CHCH}_3$;
 b) $(\text{CH}_3)_2\text{C}=\text{C}=\text{CH}_2$; d) $\text{H}-(\text{CH}=\text{CH})_4-\text{H}$; e) $\text{CH}_3-\text{CH}(\text{CH}_3)-\text{CH}=\text{CH}-\text{CH}=\text{CH}_2$; f) $\text{CH}_3-\text{C}(\text{CH}_2)_2-\text{CH}_2\text{C}=\text{CH}_2$; g) $\text{CH}_2 = \text{C}(\text{CH}_3)-\text{CH}_2-\text{CH}_2-\text{C}(\text{CH}_3)_2-\text{C}=\text{CH}_2$; h) $\text{CH}_3-(\text{CH}=\text{CH})_3-\text{CH}_3$; i) $(\text{CH}_3)_3\text{C}-\text{CH} = \text{CH}-\text{C}(\text{CH}_3)_2-\text{C}=\text{CH}_2$;
 j) $\text{CH}_2=\text{CH}-\text{CH}_2-\text{CH}(\text{C}=\text{CH})-\text{CH}=\text{CH}_2$

14. Quyidagi moddalarning tuzilish formulalarini yozing: a) sis-trans-geksadiyen-2,4; b) sis-sis-geksadiyen-2,4; d) sis-trans-geptadiyen-2,4 e) trans-sis-geptadiyen-2,4; f) trans-trans-(sis-sis-)geptadiyen-2,4

15. Quyidagi moddalarni sistematik nomenklatura bo'yicha nomlang. Har bir bir diyenning turlarini ko'rsating.

- a) $\text{CH}_3-\text{CH}_2-\text{CH}=\text{CH}-\text{CH}=\text{CH}_2$; b) $\text{CH}_3-\text{C}(\text{CH}_2-\text{CH}_3)=\text{CH}-\text{CH}=\text{CH}_2$;
 d) $\text{CH}_3-\text{C}(\text{CH}_2-\text{CH}_3)=\text{CH}-\text{C}(\text{CH}_3)=\text{CH}_2$; e) $\text{CH}_3-\text{C}(\text{CH}_2)=\text{CH}-\text{C}(\text{CH}_2-\text{CH}_3)=\text{CH}_2$;
 f) $\text{CH}_3-\text{C}(\text{CH}_3)=\text{C}(\text{CH}_3)-\text{CH}(\text{CH}_3)-\text{CH}_3$; h) $\text{CH}_2=\text{C}(\text{CH}_3)-\text{CH}_2-\text{CH}(\text{CH}_3)-\text{CH}_2-\text{CH}=\text{CH}_2$;

16. Quyidagi birikmalarning struktura formulasini yozing: a) propadiyen; b) butadiyen-1,2; d) butadiyen-1,3; e) 2- metilbutadiyen-1,3; f) 2,3- dimetilbutadiyen-1,3; g) geksadiyen-1,5. Bu birikmalardan qaysilariga quyidagi eskirgan nomlar to'g'ri keladi: divinil, diallil, allen, izopren, metilallen, metilizopren? $\text{C}=\text{C}$ bog'leri bevosita, tutashgan va ajratilgan diyenlarni belgilang.

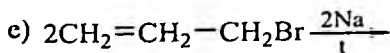
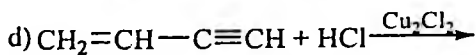
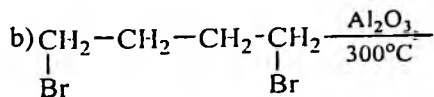
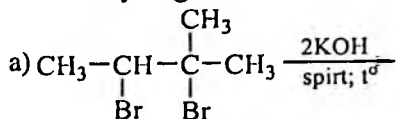
17. Quyidagi birikmalarning barqaror konformatsi- yadagi formulasini yozing: a) (E,Z)-geksadiyen-2,4; b) (Z,Z)-geksadiyen-2,4; d) (E,Z) - geptadiyen-2,4; e) (Z,E)-geptadiyen-2,4. Bu diyenlarning -sis, -trans nomlanishga binoan nomini ayting.

18. Guttaperchanning trans-1,4 poliizopren ekanligiga asoslanib, uning konfiguratsiyasini tasvirlang. Tabiiy kauchuk va guttaperchanning xossalari har xilligining sababi nimada?

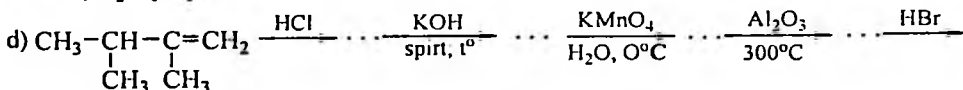
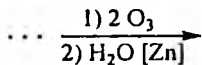
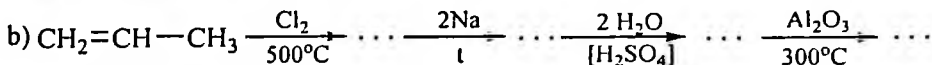
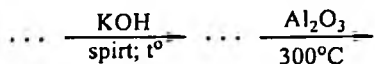
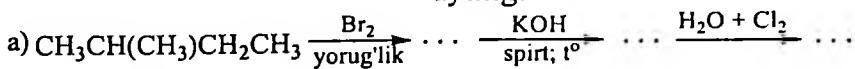
19. Izoprenning kauchuk hosil qilib polimerlanish sxemasini yozing. Tabiiy kauchukning tuzilishi qanday konfiguratsiyasi qanday?

Qauchukning yuqori elastikligi usullar bilan isbotlanadi? Uning makromolekulasining nimaga bog'liq?

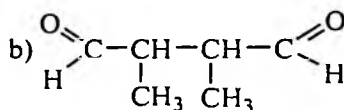
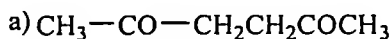
20. Quyidagi reaksiyalar natijasida hosil bo'ladigan diyenlarni nomini ayting:



21. Quyidagi reaksiyalar natijasida hosil bo'ladigan diyenlarni nomini ayting:



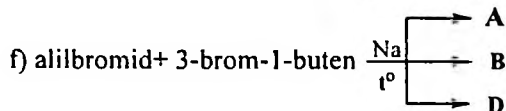
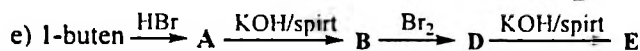
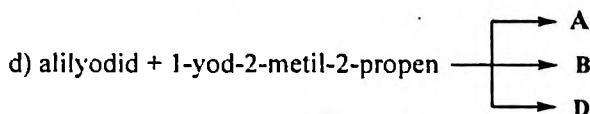
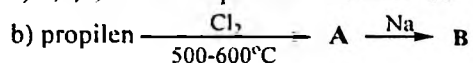
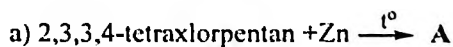
22. Ozonolizda quyidagi moddalar hosil qiladigan polimerlarning tuzilishini aniqlang:



23. C_6H_{10} tarkibli modda, spirtga natriy ta'siridan hosil bo'ladigan vodorod bilan qaytarilsa, C_6H_{12} , ozonolizidan esa sirka va izomoy aldegidlari ara-lashmasi hosil bo'ladi. C_6H_{10} tarkibli birikmaning tuzilishini va yukorida keltirilgan reaksiyalar tenglamasini yozing.

24. $\text{C}_3\text{H}_5\text{Br}$ birikmasi natriy metali bilan qizdirilishidan C_6H_{10} uglevodorodini hosil qilib, uning kislotali muhitda KMnO_4 bilan oksidlanishidan qahrabo kislota $\text{HOOC}-\text{CH}_2-\text{CH}_2-\text{COOH}$ hosil bo'ladi. Boshlang'ich birikmaning tuzilishini aniklang. Reaksiya sxemasini keltiring.

25.



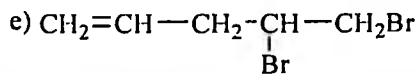
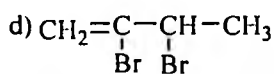
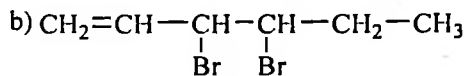
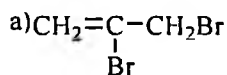
reaksiyalarda qanday moddalar hosil bo'lishini yozing va u birikmalarni nomlang.

26. a) 2,3-dimetil-1,3-butadiyen; a) 1,3-geksadiyen; d) 2-metil-1,3-pentadiyen olish uchunqaysi glikollarni degidratlash kerak?

27. Vyurs reaksiyasidan foydalanib, a) 2,3-dimetil-1,5-geksadiyen, b) 2,9-dimetil-3,7-dekadiyen, d) diallilni sintez qiling.

28. Divinil va izopren sanoatda qanday usullar bilan olinadi? Ularni olinish reaksiya tenglamalarini yozing.

29.



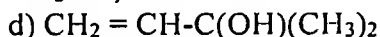
Birikmalar rux kukuni bilan qizdirilganda qanday alkadiyenlar hosil bo'ladi?

30. 2,3-dibrom-2-metilbutan; b) 1-brom-3-metil-1-buten; d) 1,3-dixlor-3-metil-3-metilbutan; e) 1,5-dibromgeksan; h) allilbromid; i) 2,4-dixlor-3,5-dimetilgeksan o'yuvchi kaliyning spirtidagi eritmasi bilan qizdirilganda qanday diyen uglevodorodlar hosil bo'ladi?

31. Vyurs reaksiyasidan foydalanib, a) 2,3-dimetil-1,5-geksadien; b) 2,9-dimetil-3,7-dekadien; v) diallilni sintez qiling.

32. a) $H_2C=CH-CHBr-CHBr-CH_2-CH_3$, b) $H_2C=CH-CH_2-CHBr-CH_2Br$ birikmalar rux kukuni bilan qizdirilganda qanday alkadienlar hosil bo'ladi?

33. Quyidagi moddalar katalitik degidratlanganda qanday diyen uglevodorodlar hosil bo'ladi?



34. Quyidagi moddalarga KOH ning spirtli eritmasi ta'sir ettirilsa qanday diyen uglevodorodlar hosil bo'ladi?

a) 3-brom-2-metilbuten-2; b) 1,5-dibromgeksan; d) 2,4-dibrom-2-metilbutan; e) 4-xlor-2-brom-2-metilpentan; f) 1,4-dibromsiklogeksan

35. Quyidagi moddalar aralashmasiga natriy metalli ta'sir ettirilganda qanday mahsulotlar hosil bo'ladi?

a) allilbromid va 3-xlorbuten-1; b) allil yodid va 3-xlor-2-metilpropen-1

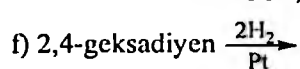
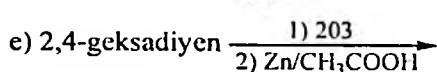
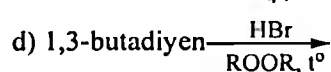
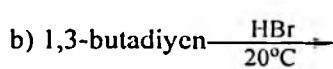
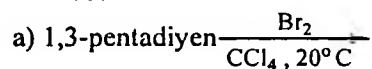
36. Siklogeksenga avval brom, so'ngra natriy gidrooksidning spirtli eritmasi ta'sir ettirilsa, qanday mahsulot hosil bo'ladi?

37. 1,3-butadien olishning mumkin bo'lgan usullarini tanlang: a) butanni degidrogenlash; b) 1-butenning oksidlanishi; d) 1-butanolning suvsizlanishi; e) vinil asetilenni gidrogenlash; f) 2-xlorobutanni dehidrohalogenatsiyasi. Reaksiya tenglamalarini keltiring.

38. Reaksiyaning unumi 75 % bo'lsa, S.V.Lebedev usuli bo'yicha 200 l 96 % li etil spirtidan ($\rho=0,8 \text{ g/sm}^3$) qancha massali (kg da) divinil (butadiyen -1,3) olish mumkinligini hisoblab toping.

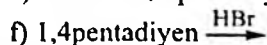
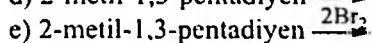
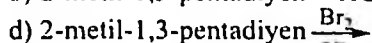
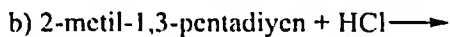
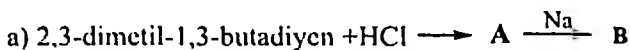
39. Tutashgan qo'shbog'li alkadiyenlarning xossalarini butadiyen -1,3 misolida tavsiflang. Tutashgan alkadiyenlar radikal va elektrofil birikish reaksiyalarining o'ziga xos xususiyatlari nimaga asoslangan? Tegishli reaksiya tenglamalari asosida tushuntiring.

40.



reaksiyalarning tenglamalarini yozing. (b) va (d) reaksiyalarning mexanizmlarini keltiring.

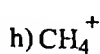
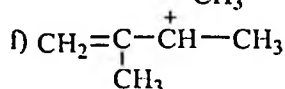
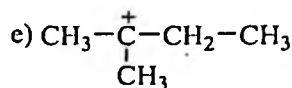
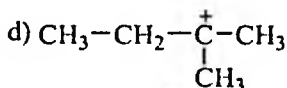
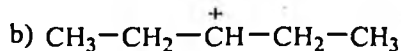
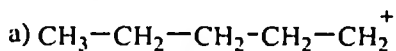
41.



reaksiyalarning tenglamalarini yozing.

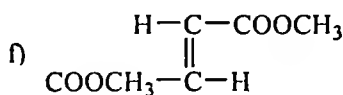
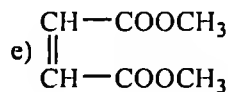
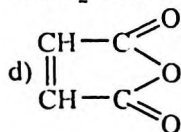
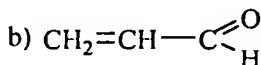
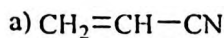
42. 1,3-butadiyenga bromning ionli va radikal birikish reaksiyalarining mexanizmlarini yozing.

43.



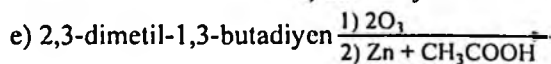
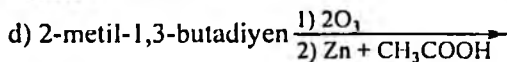
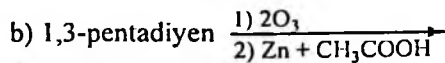
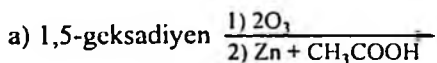
karbokationlarni barqarorligini oshib boorishi tartibida joylashtiring.

44.



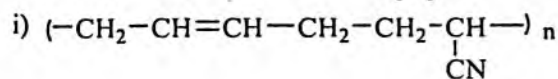
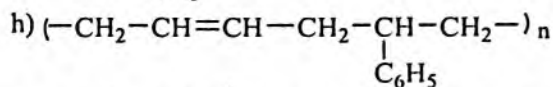
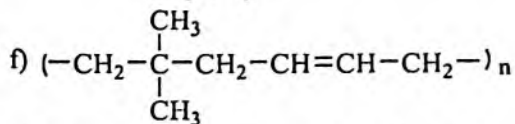
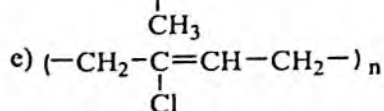
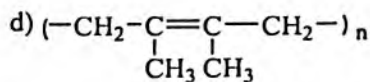
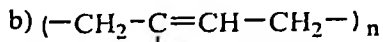
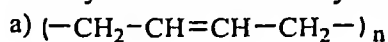
Dienofillar bilan 1,3-butadien orasida boradigan Dils-Alder reaksiyalari tenglamalarini yozing.

45.



ozonoliz reaksiyalari tenglamalarini oxirigacha yozing.

46. Polimer va sopolimerlarni qaysi monomerlardan olish mumkin? Ularning tegishli polimerlanish va sopolimerlanish reaksiyalari sxemalarini yozing:



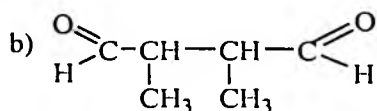
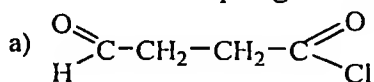
(a), (b), (d) va (e) polimerlarning ozonolizi reaksiyalari tenglamalarini yozing.

47. Tabiiy kauchuk va guttapercha tuzilishi (makromolekulalarning konfiguratsiyasi) hamda xossalari jihatidan bir-biridan qanday farq qiladi?

48. C_6H_{10} tarkibli uglevodorod katalitik gidrogenlanganda 2 mol vodorodni biriktirib *n*-geksanni, ozonoliz qilinganda esa sirka aldegid va glioksal ($\text{OHC}-\text{CHO}$)ni hosil qildi. Shu uglevodorodning tuzilishini aniqlang.

49. Ortiqcha vodorod bilan katalitik gidrogenlanganda 2,6-dimetilgeptan, xromli aralashma bilan oksidlanganda esa atseton va malon kislota ($\text{HOOC}-\text{CH}_2-\text{COOH}$) hosil qiladigan C_9H_{16} tarkibli uglevodorodning tuzilish formulasini aniqlang.

50. Ozonoliz qilinganda:



birikmalarni hosil qiladigan polimerlarning tuzilishini aniqlang.

51. C_5H_8 tarkibli uglevodorod yaqin UB-sohada yutmaydi. Uning IQ-spektrida esa 1658 cm^{-1} chastotali yutilish bor. U uglevodorod

gidrogenlanganda n-pentan hosil bo'ladi. Dastlabki uglevodorodning tuzilishini aniqlang.

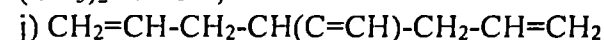
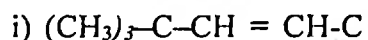
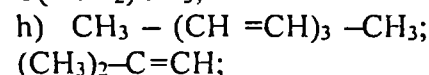
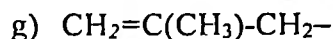
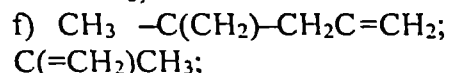
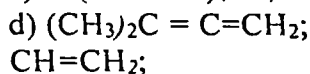
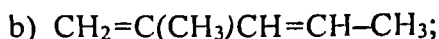
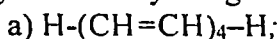
52. Elektrofil birilish reaksiyalarida allen, divinil va diallillarning reaksiyaga kirishish qobiliyatlarini solishtiring. Qaysi diyenning reaksiyaga kirishish qobiliyati kuchliroq va nima uchun?

53. Butadiyen-1,3 ning 1 moldan olingan a) H_2 b) HBr d) Br_2 bilan reaksiya tenglamalarini yozing.

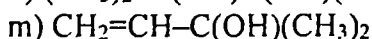
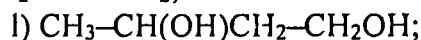
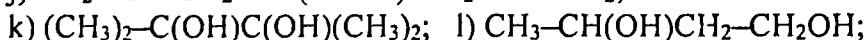
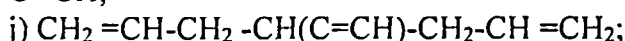
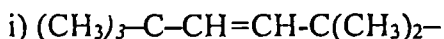
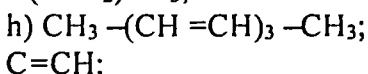
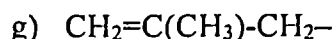
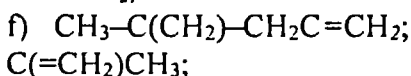
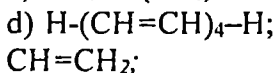
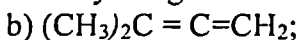
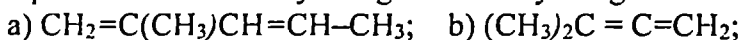
54. 2,3-dimetilbutadiyen-1,3ga HCl ta'siridan olingan mahsulot strukturasi qanday isbotlash mumkin?

55. 2-6-dimetiloktatriyen-2,5,7 ning ozonlanish mahsuloti bo'lgan ozonidni yozing. Ozonidning suv bilan parchalanish reaksiya tenglamasi qanday kechadi va qanday mahsulot hosil bo'ladi?

56. Quyida keltirilgan moddalarning polimerlanish reaksiya tenglamalarini yozing.



57. Quyida keltirilgan moddalarning a) C_2H_4 b) 64terol bilan qo'sh polimerlanish reaksiya tenglamalarini yozing.

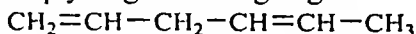


Yuqorida keltirilgan moddalarning a) vinil xlorid, 4 b) butadiyen-1,3, d) stirol, e) buten-1 bilan qo'sh piolimerlanish reaksiya tenglamalarini yozing.

58. 89,6 g 2,5% li bromning suvli eritmasidan pentadien-1,3

74. Diyen uglevodorodlarda vodorod galogenidning birikishi Markovnikov qoidasi bo'yicha boradimi? Javobingizni reaksiya tenglamalari va mexanizmlari orqali tushuntiring.

75. Uglevodorod quyidagi tuzilishga ega:



a) har qaysi uglerod atomining gibridlanish turini ko'rsatib, moddani xalqaro nomenklatura bo'yicha nomlang;

b) shu moddaning vodorod xlorid bilan boradigan reaksiyalarining tenglamalarini yozing;

d) shu uglevodorodning mavjud bo'lishi mumkin bo'lgan ochiq zanjirli izomerlarining tuzilish formulalarini ko'rsating.

Alkadiyenlarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. 1,3-butadiyen molekulasidagi uglerod atomlari qanday gibridlangan?

A) sp^3 - B) sp^2 - C) sp D) diogonal-

4. 130-133-b.

2. 1,3-butadiyendagi C_1-C_2 va C_3-C_4 bog'lar tartibi nechaga teng?

A) 1 B) 1,894 C) 2 D)

3

4. 132-b.

3. 1,3-butadiyen molekulasidagi birinchi (C_1) va to'rtinchi (C_4) uglerod atomlarining nisbiy to'yinmaganligi yoki erkin valentlik indeksi nechaga teng?

A) 0,838 B) 0,391 C) 0,667 D) 0,590

4. 131-132-b.; 11, c. 65.

4. 1,3-butadiyen molekulasidagi ikkinchi (C_2) va uchinchi (C_3) uglerod atomlarining nisbiy to'yinmaganligi yoki erkin valentlik indeksi nechaga teng?

A) 0,667 B) 0,590 C) 0,480 D) 0,391

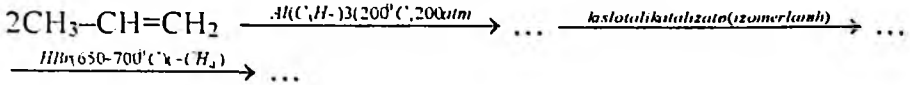
4. 131-132-b.; 11, c. 65.

C) 2-metil-1,2-butadiyen

D) 2,3-dimetil-1,3-butadiyen

4. 129-b.

11. Sanoatda quyidagi sxema bo'yicha boradigan reaksiyalarning oxirgi mahsuloti sifatida qaysi alkadiyen olinadi?



A) 1,3-butadiyen

B) 1,3-pentadiyen

C) izopren

D) 2,3-dimetil-1,3-butadiyen

butadiyen

4. 128-129-b.

12. 3 l propadiyenni yoqish uchun qancha hajm (n.sh.) havo kerak?

A) 12 l

B) 24 l

C) 60 l

D) 120 l

13. CCl_4 eritmasida 1,3-butadiyen bilan bir mol brom orasidagi reaksiya qanday mexanizmida boradi?

A) A_N

B) A_R

C) A_E

D) $\text{S}_\text{N}1$

3. c. 137-138.; 4. 133-135-b.

14. 1,3-butadiyenga peroksidlar ishtirokida BrCCl_3 ning birikishi qanday mexanizmida boradi?

A) faqat A_N

B) faqat A_R

C) faqat A_E

D) aralash (A_E va A_N)

15. c. 250-251.

15. Karbokationlarning qaysi biri eng barqaror?

A) $\text{CH}_3-\text{CH}_2-\text{C}^+(\text{CH}_3)_2$

B) $\text{CH}_3-\text{CH}_2-\text{C}^+\text{H}-\text{CH}_2-\text{CH}_3$

C) $(\text{CH}_3)_2\text{C}^+-\text{CH}=\text{CH}_2$

D) $\text{CH}_2=\text{C}(\text{CH}_3)-\text{C}^+\text{H}-\text{CH}_3$

16. Faol qo'shbog' saqlagan birikmalar (diyenofillar) 1,3-diyenlarning 1,4-holatlariga birikib, halqali birikmalarni hosil qiladi. Bu reaksiya (diyenlar sintezlar) ni kim kashf qilgan?

A) Lebedev C.V.

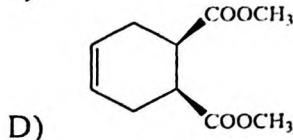
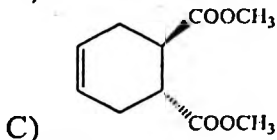
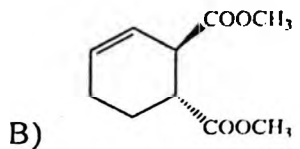
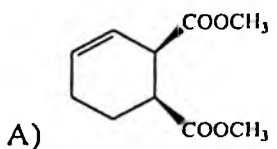
B) Dils O. va Alder K.

C) Mannix K.

D) Ziber P.

4. 135-137-b.

17. 1,3-butadiyen bilan malein kislotaning dimetilefiri ($\text{H}_3\text{COOC}-\text{CH}=\text{CH}-\text{COOCH}_3$) orasida boradigan reaksiya (diyen sintezi) natijasida hosil bo'ladigan moddani tuzilishini aniqlang.



4, 136-b.

18. $(-\text{CH}(\text{CH}_3)-\text{CH}=\text{CH}-\text{CH}(\text{CH}_3)-)_n$ polimerni qaysi monomerdan olish mumkin?

A) 1,3-geksadiyendan

B) 1,4-geksadiyendan

C) 2,4-geksadiyendan

D) 2,3-geksadiyendan

4, 137-139-b.

19. Qaysi xomashyodan qanday reaksiyalar natijasida stereoregulyar tuzilishli divinil kauchugi olinadi?

A) etil spirtni degidrogenlash va degitratlash bilan;

B) etil spirtni degidratlash va polimerlash bilan

C) butadiyenni gidrohalogenlash bilan

D) butanni degidrogenlash va polimerlash bilan

4, 137-138-b.

20. Stereoregulyar tuzilishga ega bo'lgan sintetik izopren kauchuk olishda qanday katalizator ishlatiladi?

A) $\text{Al}(\text{C}_2\text{H}_5)_3$ va TiCl_3

B) $\text{Al}(\text{C}_2\text{H}_5)_3$ va TiCl_4

C) Na

D) $\text{Al}(\text{izo-C}_4\text{H}_9)_3$ va TiCl_4

4, 138-b.

21. Tabiiy kauchuk makromolekulalaridagi izopren zvenolarida metilen guruhlar qo'shboqqa nisbatan qanday joylashgan?

A) 98 foizi sis-;

B) 98 foizi trans-;

C) 50 foizi sis-, 50 foizi trans-;

D) 70 foizi sis-, 30 foizi trans-;

trans-;

4, 138-139-b.; 18, 251- va 255-b.

22. Polimerni ozonoliz qilganda $\text{OHC}-\text{CH}(\text{CH}_3)-\text{CH}(\text{CH}_3)-\text{CHO}$ hosil bo'ldi. Polimer qaysi monomer asosida olingan?

A) izopren

B) 2,3-dimetil-1,3-pentadiyen

C) 2,4-dimetil-1,4-pentadiyen

D) 2,4-geksadiyen

23. C_6H_{10} tarkibli uglevodorod katalitik gidrogenlanganda 2 mol vodorodni biriktirib, *n*-geksanni, ozonoliz qilinganda esa sirka aldegid va glioksal ($OHC-CHO$) ni hosil qildi. Uglevodorodning tuzilishini aniqlang.

- A) 2,4-geksadiyen B) 1,3-geksadiyen
C) 1,4-geksadiyen D) 1,5-geksadiyen

24. Ortiqcha vodorod bilan katalitik gidrogenlanganda 2,6-dimetil-geptanni, xromli aralashma bilan oksidlanganda esa, atseton va malon kislota ($HOOC-CH_2-COOH$) ni hosil qiladigan C_9H_{16} tarkibli uglevodorodning formulasini aniqlang.

- A) $CH_2=C(CH_3)-CH_2-CH_2-CH=C(CH_3)_2$
B) $(CH_3)_2C=CH-CH=CH-CH(CH_3)_2$
C) $(CH_3)_2C=CH-CH_2-CH=C(CH_3)_2$
D) $(CH_3)_2C=C=CH-CH_2-CH(CH_3)_2$

25. C_5H_8 tarkibli uglevodorod yaqin UB-sohada yutmaydi, IQ-spektrida esa 1658 cm^{-1} chastotali yutilish bor. Uni gidrogenlaganda *n*-pentan hosil bo' ladi. Dastlabki uglevodorodning tuzilishini aniqlang.

- A) 1,2-pentadiyen B) 1,3-pentadiyen
C) 1,4-pentadiyen D) 2,3-pentadiyen

26. 1,3-butadiyenning UB-spektrida yutilish maksimumi qanday sohada kuzatiladi?

- A) 170-190 nm B) 200 nm C) 217 nm D) 280 nm

11, c.243.; 17, c.14

27. 1,3-pentadiyenning IQ-spektrida ikkita $C=C$ bog'ning valent tebranishlari qanday sohada kuzatiladi?

- A) $1600-1650\text{ cm}^{-1}$ B) $1670-1690\text{ cm}^{-1}$
C) $1710-1730\text{ cm}^{-1}$ D) $1740-1762\text{ cm}^{-1}$

17, c. 38.

28. C_3H_5Br tarkibli birikmani natriy bilan qizdirganda C_6H_{10} tarkibli uglevodorod hosil bo' ladi. Uglevodorodni $KMnO_4$ bilan kislotali muhitda oksidlaganda esa qahrabo kislota $HOOC-CH_2-CH_2-COOH$ hosil bo' ladi. C_3H_5Br ning tuzilishini aniqlang.

- A) $CH_3-CH=CH_2Br$ B) $CH_2=C(Br)-CH_3$
C) $CH_2=CH-CH_2Br$ D) $CH\equiv C-CH_2Br$

29. Butadiyen-1,3 ning UB-spektrida yutilish maksimumi qaysi sohada kuzatiladi?

A) 190 nm B) 217 nm C) 180 nm D) 260 nm

8, c. 97

30. 1,3-alkadiyenlar IQ-spektrida qo'sh bog'larning valent tebranishlari qaysi sohada kuzatiladi?

A) 1950-1900 sm^{-1}

B) 1750-1700 sm^{-1}

C) 1850-1800 sm^{-1}

D) 1650-1600 sm^{-1}

8, c. 97

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	B	11	C	21	A
2	B	12	C	22	D
3	A	13	C	23	A
4	D	14	B	24	C
5	C	15	C	25	C
6	C	16	B	26	C
7	B	17	D	27	A
8	D	18	C	28	C
9	C	19	D	29	B
10	B	20	D	30	D

IV BOB. ALKINLAR

Alkinlarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalriga oid masala va mashqlar

1. Atsetilen molekulasi tuzilishi misolida sp-gibridlanishni tushuntiring. Bunda bitta σ - va ikkita π - bog'lar qaysi orbitallarning qoplanishidan hosil bo'lgan?

2. Metilatsetilen va 2- metil -1- penten -4- in molekularining elektron formulalarini yozing. Har bir uglerod atomining gibridlanishi hamda C-C, C=C, C = C va C-H qaysi orbitallarning qoplanishida hosil bo'lganligini ko'rsating.

3. a) dipropilatsetilen; b) izopropilizoamilatsetilen;

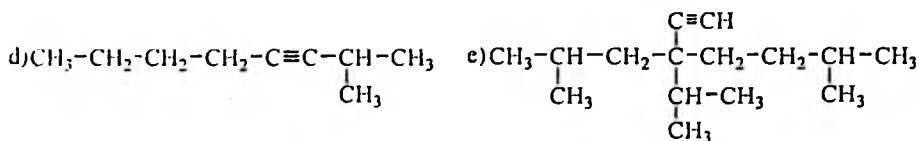
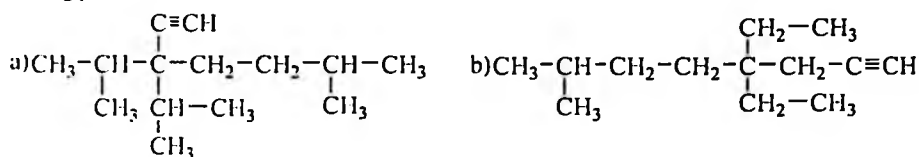
d) etilizopropilatsetilen; e) metilizobutilatsetilen;

f) diikkilamchibutilatsetilen; g)

dimetiletinilizobutilmetanning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang.

4. a) 6- metil-2-geptin; b) 2, 2, 5, 5- tetrametil-3- geksin; d) 3,5- dimetil-3- etil-1-geksin; e) 2, 9- dimetil -5- detsin; f) 2,6- dimetil -4- oktin; g) 2, 2, 5- trimetil-3-geptin-ning tuzilish formulalarini yozing va ularni ratsional nomenklaturaga binoan nomlang.

5.



ni ratsional nomenklatura bo'yicha nomlang.

6. C_6H_{10} tarkibga ega bo'lgan izomer alkinlarning tuzilish formulalarini yozing. Ularni sistematik nomenklaturaga binoan nomlang.

7. C_5H_8 tarkibga ega bo'lgan bitta uchbog'i bor bir valentli radikalning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang.

8. Quyidagi atsetilen uglevodorodlarining struktura formulalarini yozing va ularning xalqaro nomlanishga ko'ra nomini ayting: a) metiletilatsetilen; b) etilizopropilatsetilen; d) uchlamchi-butilatsetilen; e) ikkilamchi-butilizobutilatsetilen.

9. Quyidagi birikmalarning ratsional va xalqaro nomlanishga ko'ra nomini ayting:

- | | |
|---|--|
| a) $\text{CH}_3\text{-C}\equiv\text{C-(CH}_3\text{)}_3$ | b) $(\text{CH}_3)_2\text{CH-C}\equiv\text{C-CH}_2\text{-CH}_2\text{-CH}_3$ |
| d) $\text{CH}_3\text{CH}_2\text{CH(CH}_3\text{)-C}\equiv\text{C-CH}_2\text{CH}_3$ | e) $(\text{CH}_3)_3\text{C-C}\equiv\text{CH}$ |
| f) $(\text{CH}_3)_3\text{C-C}\equiv\text{C-CH}_2\text{-CH(CH}_3\text{)}_2$ | g) $\text{CH}_2=\text{CH-C}\equiv\text{CH}$ |
| h) $\text{CH}\equiv\text{C-CH}_2\text{-CH=CH}_2$ | i) $\text{CH}_3\text{-C}\equiv\text{C-CH}_2\text{-CH=CH}_2$ |

10. Quyida berilgan diyen uglevodorodlar bilan izomer va uglerod skeleti bir xil bo'lgan atsetilen uglevodorodlarini yozing va ularning nomini ayting: a) butadiyen-1,3; b) 2-metilbutadiyen-1,3; d) 3,3-dimetilpentadiyen-1,4; e) 2,3-dimetilpentadiyen-1,3; f) 2,3-dimetilbutadiyen-1,3.

11. Quyidagi uglevodorod qoldiqlarining struktura formulasini yozing: a) etinil; b) vinil; d) propargil; e) allil. Vinilatsetilen, diallilatsetilen, propargil-atsetilenning struktura formulasini yozing va ularning xalqaro nomlanishga ko'ra nomini ayting.

12. Atsetilen molekulasining atom-orbital modelini tasvirlang. Uglerod-uglerod orasidagi qo'sh va uchbog'ning uzunligini solishtiring. $\text{C}_{\text{sp}}\text{-H}$ bog' $\text{C}_{\text{sp}^2}\text{-H}$ bog'dan qanday farqlanadi? MO usuli bilan atsetilen molekulasini ta'riflang.

13. Buten-2 va butin-2 molekularining tuzilishini solishtiring. Birinchi holatdagi geometrik izomeriyaning borligini va ikkinchisida yo'qligini qanday tushuntirish mumkin?

14. Quyidagi birikmalarni kislotaligining pasayishiga qarab joylashtiring: metilatsetilen; b) sulfat kislota; d) propan; e) ammiak; f) suv; g) buten-1. Ajratib olingan qatorga tushuntirib bering.

15. Butin-1 qanday reagentlar bilan kislotalar kabi reaksiyaga kirisha oladi:

a) NaH; b) KOH; d) KNH_2 ; e) CH_3COONa ; f) $\text{H-C}_4\text{H}_9\text{Li}$; g) LiCl ?

Izohlang. Reaksiya sxemalarini yozing. Hosil bo'ladigan birikmalarning nomini ayting.

16. Quyida keltirilgan birikmalardan alkinlarni olish reaksiya sxemasini yozing:

a) $\text{Na}^+ : \text{C} \equiv \text{C} - \text{CH}_3$; b) $\text{CH}_3\text{CH}_2\text{C} \equiv \text{C} - \text{Ag}$; d) $\text{Li}^+ : \text{C} \equiv \text{C} - \text{CH}_3$;
e) $\text{CH}_3\text{CH}_2\text{C} \equiv \text{C} - \text{Cu}$; f) $\text{CH}_3 - \text{C} = \text{C} - \text{MgBr}$; g) $\text{Na}^+ : \text{C} = \text{C}^- : \text{Na}^+$.

Bu birikmalarning suvga munosabati qanday? Suv bilan o'zaro bog'lanishi bo'lgan reaksiya sxemasini yozing.

17. Butin-1 ning quyidagi reagentlar ta'sirida hosil qiladigan organik birikmalarning formulasini va nomini yozing:

a) H_2 (1 mol), [Pd, Pbo]; b) H_2 (2 mol); [Ni]; d) Br_2 (1 mol); e) Br_2 (2 mol); f) HCl (1 mol); g) HCl (2 mol); h) H_2O [H^+ , Hg^{2+}]; i) NaNH_2 , NH_3 (suyuq); j) $\text{Ag}(\text{NH}_3)_2\text{OH}$; k) $\text{Cu}(\text{NH}_3)_2\text{OH}$; l) Na , NH_3 (suyuq); m) (1 mol), [ROOR]; n) O_3 , so'ngra H_2O .

Buten-1 reaksiyaga kirishmaydigan reagentlarni belgilang.

18. Quyidagi birikmalar uchun Kucherov reaksiyasi sxemasini yozing: a) atsetilen; b) metilatsetilen; d) dimetilatsetilen; e) metiletilatsetilen.

Kucherov reaksiyasi natijasida: aldegid, keton, ketonlar aralashmasi qaysi hollarda va qanday sharoitda hosil bo'lishini ko'rsating.

19. Pentin-2 ning quyidagi reagentlar bilan reaksiyasini yozing. Har bir reaksiyaning stereokimeviy mahsuli qanday, tushuntiring:

a) H_2 (1 mol) [Pd, Pbo]; b) Br_2 (1 mol); d) Na , NH_3 (suyuq); e) B_2H_6 , so'ngra CH_2COOH .

20. Quyidagi juft birikmalarni qanday reaksiyalar bilan farqlash mumkin: a) pentan va pentin-2; b) penten-2 va pentin-2; d) pentin-2 va pentin-1; e) pentadiyen-1,3 va pentin-2.

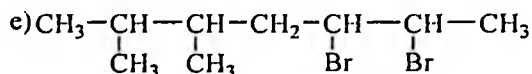
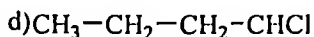
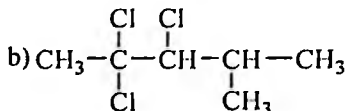
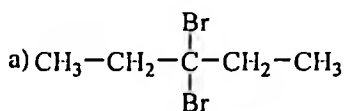
21. Quyidagi keltirilgan uglevodorodlarning HCl (1 mol) bilan reaksiyasi sxemalarini yozing: a) buten-1; b) butin-1; d) butadiyen-1,3. Reaksiya mexanizmlarini keltiring. Qaysi holda reaksiyaga kirishish tezligi yuqoriroq qaysi holda kamroq bo'ladi. Nima uchun?

22. 20% qo'shimchasi bor 25 kalsiy karbidni parchalash uchun necha ml suv kerak? Bunda ajraladigan atsetilenning hajmini (n. sh.) aniqlang.

23. 5,6 l atsetilen olish uchun (n.sh.) necha gramm vinil xlorid KOH ning spirdagi eritmasi bilan reaksiyaga kirishadi?

24. 1 kg texnik kalsiy karbid suv ta'sirida to'liq parchalanganda 300 l atsetilen olindi. Kalsiy karbidning shu namunasidagi qo'shimchalarning massa ulushini toping.

25.



Birikmalarni degidrogalogenlaganda qanday atsetilen uglevodorodlar hosil bo'ladi?

26. a) 3-geptin; b) 2,2-dimetil-3-geksin; d) diuchlamchibutilatsetilen; e) 2-metil-3-geksin; f) metiluchlamchibutilatsetilen; g) metilikkilamchibutilatsetilenni olish uchun alkanlarning qaysi dibromli hosilalarini degidrogenlash kerak?

26. a) 2,2,3,3-tetrabrombutan \rightarrow 2-butin;

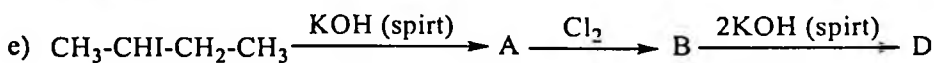
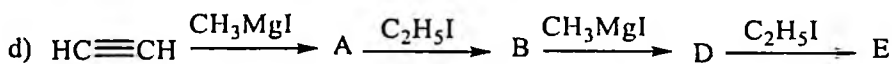
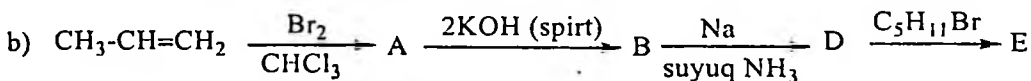
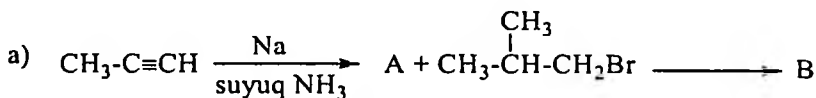
b) n-butil spirt \rightarrow etilatsetilen;

d) 4-metil-1-penten \rightarrow metilizobutilatsetilen;

e) kalsiy karbonat \rightarrow etilbutilatsrtilen kimyoviy aylanishlarni amalga oshiring. Bureaksiyalarning qaysi reaktivlar yordamida va qanday sharoitda borishini ko'rsating.

27. Xohlagan reagentlardan foydalanib: a) 1,2-dibrompropan; b) propilen; d) propan; e) n-propil spirt; f) 1,1-dixlorpropan; g) atsetilen; h) 1,1,2,2-tetrabrompropan; i) izopropilbromiddan metilatsetilenni sintez qilish reaksiyalarning tenglamalarini yozing.

28.

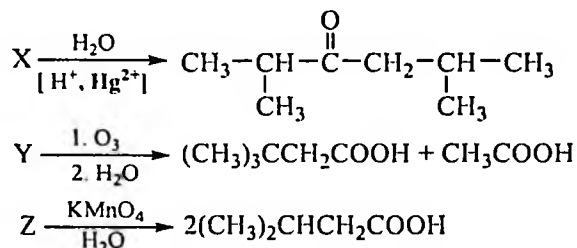


aylanishlarni amalga oshiring. Bu reaksiyalarning tenglamalarini yozing. Hosil bo'lgan oraliq va oxirgi mahsulotlarni nomlang.

29. Quyidagi o'tishlarni amalga oshiring: a) n-butan=butin-2; b) 3-metil buten-1=3-metilbutin-1; d) buten-1=butin-2; e) propilen=metilizopropilatsetilen; f) butanol-1=etilbutilatsetilen.

30. Atsetilen yordamida olinadigan moddalarning olinish reaksiyalari sxemasini yozing: a) atsetaldegid; b) etilvinilefir ($\text{CH}_3\text{CH}_2\text{-O-CH=CH}_2$); d) vinilatsetat ($\text{CH}_2=\text{CHOCOCH}_3$); e) vinilatsetilen; f) butin-2-diol-1,4; g) butandiol-1,4; h) butadiyen-1,3.

31. Quyidagi reaksiyalarda qanday (x,y,z) alkinlardan foydalanish mumkin:



32. Mis oksidi ammiakdagi eritmasi bilan qizil cho'kma, kaliy permanganat ta'sirida kislotalik muhitda oksidlanishidan izomoy kislota hosil qiladigan, C_5H_8 tarkibli birikmaning tuzilish formulasini aniqlang.

33. C_6H_{10} tarkibli modda kumush oksidining ammiakli eritmasi bilan reaksiyaga kiritmaydi, lekin sulfat kislota va simob sulfatning suvdagi eritmasi bilan qizdirilganda etilizopropilketon va metilizobutylketon aralashmasi hosil bo'ladi. Boshlang'ich birikmaning tuzilishini aniqlang.

34. C_6H_{10} tarkibli birikma quyidagi xossalarga ega: a) bromli suvni rangsizlantiradi; b) $\text{Ag}(\text{NH}_3)_2\text{OH}$ bilan reaksiyaga kirishmaydi; d) yaqin UB-oblastida yutilmaydi; e) IQ-spektrining 3300-3100, 2300-2100 va 1700 - 1600 sm oblastlarida yutilish ega emas; f) ozonolizidan faqat propion kislotasini hosil qiladi. C_6H_{10} birikmaning tuzilishini aniqlang.

35. 1-butin va a) Ni katalizatorligida 1 mol H_2 ; b) Ni katalizatorligida 2 mol H_2 ; d) 1 mol Br_2 ; e) 1 mol HCl ; h) 2 mol HCl ; i) sulfat kislota va HgSO_4 ishtirokida H_2O ; j) Ag_2O ning ammiakdagi eritmasi; k) CuCl ning ammiakdagi eritmasi orasida

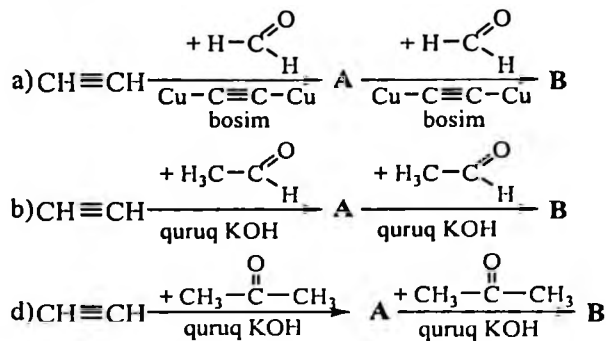
boradigan reaksiyalarning tenglamalarini yozing. Hosil bo'ladigan moddalarni nomlang.

36. a) ikkilamchibutilatsetilen; b) uchlamchibutilatsetilen; d) 1-geksin uchun Kucherov reaksiyasi tenglamalarini yozing.

37. Metallar karbonillari ishtirokida va bosim ostida atsetilenni a) CO va CH₃OH; b) CO va C₂H₅OH; a) CO va CH₃NH₂; a) CO va C₂H₅-NH-C₂H₅ bilan karbonillash reaksiyalari tenglamalarini yozing va hosil bo'lgan birikmalarni nomlang.

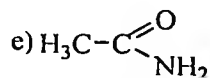
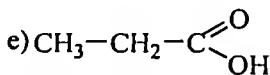
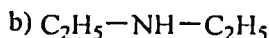
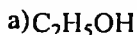
38. a) 2-geksin; b) 3-geksin; d) 1-geksinning xromli aralashma bilan oksidlanishidan qanaqa karbon kislotalar hosil bo'ladi?

39.



reaktlarning tenglamalarini yozing.

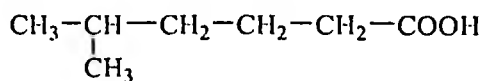
40. Atsetilen va



orasida boradigan vinillash reaksiyalarining tenglamalarini yozing.

41. Kumush oksidning ammiakdagi eritmasi bilan reaksiyaga kirishmaydigan, xromli aralashma bilan oksidlaganda propion va izomoy kislotalar aralashmasini, katalitik gidrogenlaganda esa 2 mol vodorodni biriktirib, 2-metilgeptan hosil qiladigan C₈H₁₄ tarkibli uglevodorodning tuzilishini aniqlang.

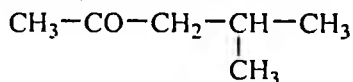
42. Mis oksidning ammiakdagi eritmasi bilan qizil rangli cho'kma, katalitik gidrogenlaganda esa 2 mol vodorodni biriktirib, 2-metilgeptan, kaliy permanganat bilan kislotali muhitda oksidlanganda esa



ni

hosil qiladigan C_8H_{14} tarkibli uglevodorodning tuzilishini aniqlang.

43. C_6H_{10} tarkibli uglevodorod Kucherov reaksiyasi sharoitida suv bilan reaksiyaga kirishib, metilzobutilketon



ni,

katalitik gidrogenlaganda 2 mol vodorodni biriktirib, 2-metilpentanni hosil qiladi, kumush oksidning ammiakdagi eritmasi bilan reaksiyaga kirishadi. Uglevodorodning tuzilishini aniqlang.

44. Etan, etilen va atsetilenning kislota xossalarini taqqoslang. Ulardagi uglerod atomining elektromanfiyligi, C-H bog'larning uzunligi va dipole momenti qanday o'zgaradi?

45. Birinchi idishda pentan, ikkinchi idishda 1-penten, uchinchisida esa 1-pentin bor. Qaysi idishda qaysi modda borliginiqanday usullar bilan aniqlash mumkun?

46. C_6H_{10} tarkibli uglevodorod quyidagi xossalarga ega:

a) kumush oksidning ammiakdagi eritmasi bilan reaksiyaga kirishmaydi;

b) bromli suvni rangsizlantiradi; d) yaqin UB-sohada yutmaydi; e) IQ-spektrda 3300-3100, 2300-2100 va 1700-1600 sm^{-1} sohalarda tebranishlari yo'q; h) ozonolizda faqat propion aldegid hosil bo'ladi. Bu uglevodorodning tuzilishini aniqlang.

47. C_4H_6 tarkibli uglevodorod mis oksidning ammiakdagi eritmasi bilan qizil cho'kma hosil qiladi. Uning IQ-spektrida 3305 va 2125 sm^{-1} sohalarda yutilish bor. Uglevodorodning tuzilishini aniqlang.

48. Bug'larining vodorodga nisbatan zichligi 41 bo'lgan barcha izomer atsetilen uglevodorodlarining struktura formulalarini yozing. Ularni sistematik nomenklaturaga ko'ra nomlang.

49. Bug'larining kislorodga nisbatan zichligi 1,69 ga teng bo'lgan izomer atsetilen uglevodorodlarining element tarkibini hisoblang va ularni sistematik nomenklaturaga ko'ra nomlang.

50. Asosiy zanjirida 5 ta uglerod atomi bor atsetilen uglevodorodi 80 g bromni biriktirib oldi va 104 g mahsulot hosil bo'ldi. Atsetilen uglevodorodi kumush oksidning ammiakdagi eritmasi bilan

reaksiyaga kirishmasligini bilgan holda uning struktura formulasini va nomini toping.

51. Uglerod atomlari ochiq zanjir hosil qiladigan 1,62 g to'yinmagan uglevodrodni to'liq katalitik gidrogenlash uchun 1,344 l vodorod kerak bo'ldi. Shu uglevodorodning vodorodga nisbatan zichligi 27 ekanligini va u sanoatda kauchuk ishlab chiqarishda keng foydalanishini e'tiborga olib, uning tuzilishini aniqlang.

52. Uglerod atomlari ochiq zanjir hosil qilgan 0,1 mol uglevodorod to'liq yondirilganda 5,4 ml suv hosil bo'ladi va 8,96 l CO₂ ajralib chiqadi. Shu uglevodorod ekvimolekulyar miqdordagi xlor bilan o'zaro ta'sir ettirilganda asosan simmetrik tuzilgan, xlor atomlari zanjirning uchlarida joylashgan dixloralken hosil bo'ladi. Dastlabki uglevodorodning tuzilishini aniqlang.

53. Bitta qo'sh bog', ikkita uchbog' va uchta xalqa hosil qiladigan uglevodorodlarning gomologik qatori uchun umumiy formula toping. n ta uglerod atomi saqlagan molekula nechta kimyoviy bog' hosil qila oladi? Javobingizni asoslang.

54. 10 ml noma'lum uglevodorodga 70 ml kislorod qo'shib elektr uchquni yordamida yondirildi. Reaksiya tugagach va suv bug'lari kondensatlangach gazning hajmi 65 ml ga tenglashdi. Gazlar aralashmasi ishqor eritmasiga qo'shib chayqatilgach uning hajmi 25 ml gacha kamaydi. Uglevodorodning formulasini toping.

55. Molekulasida uglerod atomlari soni bir xil bo'lgan alkan, alken va alkinlarning 2,8 l aralashmasi 17,4 g kumush oksidning ammiakdagi eritmasi bilan reaksiyaga kirishishi yoki 28 g bromni biriktirib olishi mumkin. Uglevodorodlar dastlabki aralashmasining sifat va miqdoriy tarkibini aniqlang.

56. Noma'lum uglevodorod X mo'l miqdordagi brom bilan ta'sirlashganda 73,4% brom saqlagan to'rt bromli hosila hosil bo'lib, kaliy permanganat bilan sulfat kislota ishtirokida ta'sirlashganada ikkita bir asosli karbon kislotalar hosil bo'ladi. X uglevodorodning tuzilishini toping, reaksiyalarning tenglamalarini toping.

57. Noma'lum uglevodorod X mo'l miqdordagi brom bilan ta'sirlashganda 75,8% brom saqlagan to'rt bromli hosila hosil bo'lib, kaliy permanganat bilan sulfat kislota ishtirokida ta'sirlashganda bitta bir asosli karbon kislota hosil bo'ladi. X uglevodorodning tuzilishini toping, reaksiyalarning tenglamalarini toping.

58. Asosiy zanjirida beshta uglerod atomi saqlagan atsetilen uglevodorodi eng ko'pi bilan 80 g bromni biriktirib, 104 g birikma hosil qila oladi. Uglevodorod kumush oksidining ammiakli eritmasi bilan reaksiyaga kirisha olmasa, uning formulasini toping.

59. Etilendan buten-2 va butin-2 hosil qilish reaksiya tenglamalarini yozing.

60. Vinilbromidga ishqorning spirtidagi eritmasi ta'sir ettirib 4,48 l atsetilen olish uchun xom-ashyodan qanday massada olish kerak?

61. Tarkibidagi qo'shimchalarning massa ulushi 29 % bo'lgan 45 g texnik kalsiy karbidan n.sh.da necha l atsetilen olish mumkin?

62. 44,8 l etanning to'liq degidrogenlanishidan olingan alkin necha g bromni biriktirib olishi mumkin?

63. 19,2 kg kalsiy karbidan olingan atsetilenni to'liq oksidlash uchun necha m³ havo kerak bo'ladi?

64. Kalsiy karbidan ikki bosqichli sintez bilan vinilxlorid olishda sintez har qaysi bosqichining unumi nazariy unumning 80% ni tashkil etsa, 12,5 g vinil xlorid olish uchun 80 % li texnik karbidan qancha massa kerak bo'ladi?

65. Kalsiy karbidga suv ta'sir ettirib olingan 1,12 l rangsiz gazga 2,925 g osh tuziga konsentrlangan sulfat kislota ta'siridan hosil bo'lgan vodorod xlorid biriktirildi. Vodorod xloridning birikish mahsuloti polimerlanganda 2,2 g polimer olindi. Bunda qanday polimer olingan? Monomerning polimerga aylanish unumini hisoblang va barcha reaksiya tenglamalarini yozing.

66. CaC₂ ga suv ta'sir ettirib olingan 1,2 l rangsiz gazga 2,925 g osh tuziga konsentrlangan sulfat kislota ta'sirida hosil bo'lgan HCl biriktirildi. HCl ning biriktirish mahsuloti polimerlanganda 2,2 g polimer olindi. Bunda qanday polimer hosil bo'ldi? Monomerning polimerga aylanish unumi (nazariyga nisbatan % da) qanday bo'lgan? Bunda qanday massali CaC₂ sarflangan?

67. A uglevodorod qizdirilganda ikki modda, oddiy B modda va murakkab modda C hosil bo'ladi. 650°C gacha qizdirilgan aktivlangan ko'mir ustidan C modda o'tkazilsa, o'ziga xos hidga ega, oson qaynaydigan va suvda erimaydigan suyuqlik hosil bo'ladi. A,B,C moddalarni aniqlang. Reaksiya tenglamalarini yozing.

68. A modda suv bilan shiddatli reaksiyaga kirishib, biri gaz bo'lgan ikki moddani hosil qiladi. B gaz modda o'zining hajmidan ikki barobar ko'p hajmdagi xlorni biriktirib, ko'pchilik organik moddalarni

eritadigan S erituvchini hosil qiladi. A,B,Cmoddalarni aniqlang. reaksiya tenglamalarini yozing.

69. 5,6 l (n.sh.) atsetilen hosil bo'lgan bo'lsa, kalsiy karbidning qanday massasi suv bilan reaksiyaga kirishgan?

70. Kalsiy karbidan olingan 1,12 l rangsiz gazga 2,925g osh tuziga konsentrlangan sulfat kislota ta'sir ettirib olingan vodorod xlorid biriktirildi. Hosil bo'lgan mahsulot polimerlanib 2.2 g polimer hosil qildi. Qaysi polimer hosil bo'lgan? Monomerning polimerga aylanish unumini toping.

71. Etin, propen va propan aralashmasini qanday qilib tarkibiy qismlarga ajratish mumkin?

72. Atsetilen va neorganik moddalardan foydalanib metan hosil qiling.

73. Kalsiy karbonat va boshqa noorganik moddalardan foydalanib, simmetrik tetrabrometan hosil qiling. Buning uchun nechta bosqich talab qilinadi? Reaksiyalarning tenglamalarini yozing.

74. Ikki uglevodoroddan qaysi biri atsetilen, qaysi biri butin-1 ligini qanday aniqlash mumkin? Tegishli reaksiyalarning tenglamalarini yozing.

75. Kucherov reaksiyasi bo'yicha quyidagi moddalarni suv bilan ta'sirlashish reaksiya tenglamasini yozing.

a) pentin-1; b) izopropilatsetilen; d) uchlamchibutilatsetilen; e) butin-2.

76. Etilen, propilen va atsetilen aralashmasining zichligi 1.304 g/sm³ bo'lib shu aralashmaning 1 l miqdori 1,1 l xlorini biriktirib olsa aralashmaning hajm bo'yicha foiz tarkibini toping.

77. Xromli aralashma bilan quyidagi moddalar oksidlanish reaksiya tenglamalarini yozing. Qanday karbon kislotalar hosil bo'ladi?

a) geksin-1; b) geksin-3; d) 2,6,6-trimetilgeptin-3.

78. Atsetilenning quyidagi moddalar bilan reaksiya tenglamasini yozing.

a) etil spirit; b) sianid kislota; d) chumoli aldegid; e) sirka aldegid; f) atseton.

79. Quyidagi moddalar kondensatsiya reaksiya tenglamalarini yozing.

a) metil atsetilen va butanon-2; b) vinil atsetilen va atseton; d) etilatsetilen va formaldegid.

80. Pentin-1 chala gidrogenlanganda alkan, alken va alkin aralashmasi hosil bo'ldi. Aralashmani qanday reaksiyalar orqali ajratish mumkin?

81. 20 ml metan va atsetilen aralashmasi ortiqcha kislorodda yondirilganda 32 ml CO₂ hosil bo'lgan bo'lsa metanning hajmiy ulushini toping.

82. Izopren bilan pentin-2 ning toluoldagi eritmasining umumiy massasi 4,56 g bo'lib, u 12,8 g brom bilan (qizdirilmagan va katalizator qo'llanilmagan holda) reaksiyaga kirishishi mumkin. Aralashmadagi toluolning massa ulushini toping.

83. Etan, propilen va atsetilenning aralashmasi 448 ml hajmi egallaydi va bromning tetraxlormetandagi 40 ml 5% li eritmasini ($\rho=1.6 \text{ g/sm}^3$) rangsizlantirishi mumkin. Boshlang'ich aralashma to'liq yondirilganda hosil bo'lgan CO₂ ning hammasi yutilishi mumkin bo'lgan KOH ning 40% li eritmasini minimal hajmi 5 l ga teng. Boshlang'ich aralashmadagi gazlarning miqdori (hajmga ko'ra %) da aniqlang. Gazlarning hajmi n.sh. da o'lichangan.

84. Pentin-1 chala katalitik gidrogenlanganda pentan, pentin-1 va reaksiyaga kirishmay qolgan pentin-1 dan tarkib topgan uglevodorodlar aralashmasi hosil bo'ldi. Olingan aralashmadan har qaysi uglevodorodni qanday kimyoviy reaksiyalar yordamida ajratib olish mumkin? Sodir bo'ladigan reaksiyalarning tenglamalarini yozing.

85. Uglerod atomlari ochiq zanjir hosil qiladigan 1,62 g to'yinmagan uglevodorodni to'liq katalitik gidrogenlash uchun 1,344 l vodorod kerak bo'ldi. Shu uglevodorodning vodorodga nisbatan zichligi 27 ekanligini va u sanoatda kauchuk ishlab chiqarishda keng foydalanilishini e'tiborga olib, uning tuzilishini aniqlang.

86. Molekulasidagi uglerod atomlari soni bir xil bo'lgan alkan, alkin va alkenning 2,8 l aralashmasi 17,4 g kumush oksid (ammiakdagi eritmasi) bilan reaksiyaga kirishishi yoki 28 g bromni biriktirib olishi mumkin. Uglevodorodlar dastlabki aralashmasining sifat va miqdoriy tarkibini (hajmga ko'ra % da) aniqlang.

87. Kumush oksidining ammiakdagi eritmasi orqali o'tkazilgandan keyin atsetilen bilan etilen aralashmasining hajmi necha marta kamayishini hisoblab toping. Shu aralashmaning 1,12 litri qorong'uda 3,82 ml brom ($\rho=3,14 \text{ g/sm}^3$) bilan oson reaksiyaga kirishishi mumkinligini e'tiborga oling.

88. Kislorodga nisbatan zichligi 1,69 bo'lgan atsetilen qatori uglevodorodlarining element tarkibini (massa bo'yicha) toping. Mumkin bo'lgan barcha izomerlarning formulalarini yozing.

89. Gomologik qatorning ikkinchi vakili bo'lgan atsetilen qatori uglevodorodning yonish tenglamasini yozib, 5.6 l uglevodorodning yonishi uchun talab qilinadigan havoning hajmini toping.

90. Etan va atsetilen aralashmasi bromli suv solingan idishdan o'tkazilganda idishning massasi 1,3 g ga ortdi. Aralashma to'liq yondirilganda 14 l (n.sh.) karbonat angidrid hosil bo'ldi. Dastlabki aralashmadagi etanning massa ulushini toping.

91. Uchta kavsharlangan ampulalarda: metan, karbonat angidrid va atsetilen bor. Ularning kimyoviy va fizikaviy xossalriga asoslangan holda qanday qilib, qaysi ampulada qaysi gaz borligini qanday aniqlash mumkin? Tegishli reaksiyalarning tenglamalarini keltiring.

92. Etan bilan atsetilenning aralashmasi bromli suv solingan idishdan o'tkazilganda idishning massasi 5,2 g ga ortdi. Shunday miqdordagi aralashma yoqilganda 56 l karbonat angidrid (n.sh.) hosil bo'ldi. Uglevodorodlarning dastlabki aralashmadagi hajmiy ulushlarini toping.

93. 896 ml (n.sh.) propen bilan atsetilenning aralashmasi 800 g 2% li bromli suv eritmasidan o'tkazildi. Bromli suv eritmasini to'liq rangsizlantirish uchun 3,25 g rux kukuni qo'shishga to'g'ri keldi. Dastlabki aralashmadagi gazlarning hajmiy ulushlarini toping.

94. 1,12 l atsetilen bilan etilen aralashmasi qorong'ida 3.82 ml brom bilan (zichligi 3,14 g/ml) oson reaksiyaga kirisha oladi. Aralashma kumush oksidining ammiakdagi eritmasi orqali o'tkazilsa, uning hajmi necha marta kamayadi?

95. Etan, propen va atsetilenning 448 ml (n.sh.) aralashmasi 40 ml 5% li (zichligi 1,6 g/ml) bromning tetraxlormetandagi eritmasi bilan reaksiyaga kirisha oladi. Aralashma to'liq yondirilganda ajraladigan karbonat angidridni biriktira oladigan 40% li kaliy gidroksidning minimal hajmi (zichligi 1,4 g/ml) 5 ml ga teng bo'lsa, aralashmadagi gazlarning hajmiy ulushlarini toping.

96. Bir xil sondagi uglerod atomlari saqlagan 2.8 l (n.sh.) alkan, alkin va alkenning aralashmasi 17,4 g kumush oksidining ammiakdagi eritmasi yoki 28 g brom bilan reaksiyaga kirisha oladi. Aralashmadagi gazlarning hajmiy ulushlarini toping.

97. 7,84 l (n.sh.) bir xil sondagi uglerod atomlari saqlagan etilen va atsetilen qatoriga tegishli gazsimon uglevodorodlar aralashmasi 80 g bromni biriktira oladi. Bunda hosil bo'ladigan bromli hosilalar aralashmasi 94,4 ga teng bo'lsa, dastlabki aralashmadagi uglevodorodlarning massa ulushlarini toping.

98. 3,36 l etan, etilen va atsetilenning aralashmasi bromning massa ulushi noma'lum bo'lgan tetraxlormetandagi eritmasi orqali o'tkazildi. Bunda aralashmaning hajmi 1,12 l ga kamaydi va bromning miqdori 0,04 molga tenglashdi. Etilen va atsetilenning dastlabki aralashmadagi hajmiy nisbatlari 1:1 bo'lgan bo'lsa, bromning boshlang'ich miqdorini va dastlabki aralashmadagi gazlarning hajmiy ulushlarini toping.

99. Atsetilen uglevodorodi bilan kislorod aralashmasining zichligi vodorod bo'yicha 18,55 ga teng. Uglevodorod yonib reaksiya mahsulotlari sovutilgach gazlar aralashmasini bromning benzoldagi eritmasi orqali o'tkazildi. Aralashmaning hajmi bunda uch barobar kamaydi. Uglevodorodning tuzilishini va boshlang'ich aralashmadagi gazlarning hajmiy ulushlarini toping.

Alkinlarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

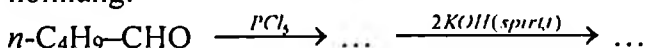
1. Atsetilen molekulasida qanday geometrik shaklga ega?
A) tetraedrik B) piramidal
C) chiziqsimon D) yassi
- 4, 113-b.
2. C_6H_{10} tarkibli alkinning nechta izomeri bor?
A) yettita B) oltita C) beshta D) sakkizta
- 6, 46- va 50-b.
3. 20 g texnik kalsiy karbid suv bilan reaksiyaga kirishganda 6,3 l (n.sh.) atsetilen ajraldi. Karbiddagi qo'shimchalarning massa ulushini aniqlang.
A) 0,9 B) 0,8 C) 0,1 D) 0,3
4. Massa ulushida 0,36 qo'shimcha saqlagan 50 g texnik kalsiy karbid ortiqcha suv bilan reaksiyaga kirishganda necha litr (n.sh.) atsetilen ajraladi?

- A) 33,6 B) 22,4 C) 5,6 D) 11,2

5. 5,6 l atsetilen (n.sh.) olish uchun necha gramm vinil xlorid o'yuvchi kaliyning spirtidagi eritmasi bilan reaksiyaga kirishadi?

- A) 31,25 g B) 15,625 g C) 7.8225 D) 23,4375 g

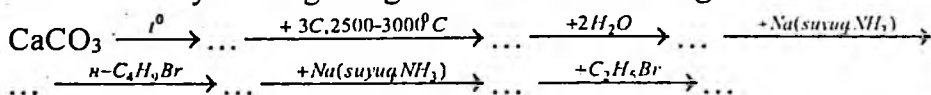
6. Quyidagi reaksiyalarning oxirgi mahsuloti hisoblangan alkinni nomlang:



- A) 2-pentin B) 3-metil-1-butin
C) 1-pentin D) 2-metil-3-butin

2, τ.1, c. 307-308.; 4, 111- va 235-b.

7. Reaksiyalarning oxirgi mahsulotini nomlang:



- A) 1-oktin B) 2-oktin C) 3-oktin D) 2-metil-3-geptin

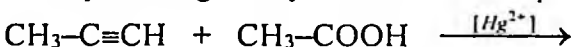
4, 109-110-b.

8. Metilatsetilenga natriy ta'sir ettirildi. Hosil bo'lgan modda izobutil bromid bilan reaksiyaga kiritildi. Qanday uglevodorod hosil bo'ladi?

- A) etilpropilatsetilen B) metilikkilamchibutilatsetilen
C) etilizopropilatsetilen D) metilizobutilatsetilen

4, 111- va 121-b.

9. Elektrofil birikish mexanizmiga asoslanib quyidagi reaksiyalarning asosiy mahsulotini aniqlang:



- A) $CH_3-\underset{\text{O}}{\underset{\parallel}{C}}-O-C\equiv C-CH_3$ B) $CH_3-\underset{\text{OH}}{CH}-O-C\equiv C-CH_3$
C) $CH_3-\underset{\text{O}}{\underset{\parallel}{C}}=CH_2$ D) $CH_3-\underset{\text{O}}{\underset{\parallel}{C}}=CH-OCOCH_3$

4, 117-b.

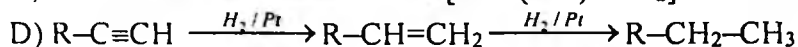
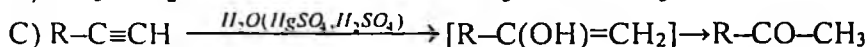
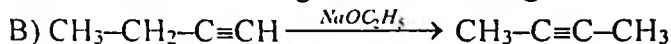
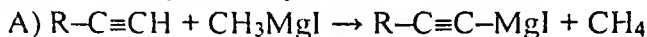
10. Qaysi reaktivlar bilan va qanday qilib atsetilenni etilendan farq qilish mumkin?

- A) bromli suvni rangsizlantirishi bilan

- B) kaliy permanganat eritmasini rangsizlantirishi bilan
 C) yonganda alangasining o`ziga xosligi bilan
 D) kumush oksidning ammiakdagi eritmasi bilan

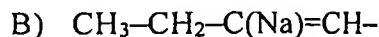
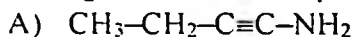
4, 122-b.

11. Alkinlar uchun xarakterli bo`lgan reaksiyalarning qaysi biri Kucherov reaksiyasi deb yuritiladi?

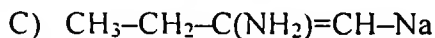


4, 117-b.

12. 1-butunga $NaNH_2$ ta'sir ettirilganda hosil bo`ladigan organik moddaning formulasini aniqlang.



NH_2



4, 122-b.

13. 2-geksinni xromli aralashma bilan oksidlaganda qanday karbon kislota (yoki kislotalar) hosil bo`ladi?

A) faqat sirka kislota

B) faqat *n*-moy kislota

C) faqat propion kislota

D) sirka va *n*-moy kislotalar

3, c. 153.; 4, 121-b.

14. Dietilatsetilen qisman zaharlangan (uncha faol bo`lmagan) Lindlar katalizatori $Pd/CaCO_3/Pb(OCOCH_3)_2$ ishtirokida bir mol vodorod bilan gidrogenlanganda qanday alken hosil bo`ladi?

A) trans-3-geksen

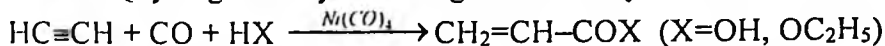
B) sis-3-geksen

C) sis-3-geksen va trans-3-geksenning teng miqdordagi aralashmasi

D) sis-2-geksen

4, 118-b.

15. Quyidagi reaksiya kimning nomi bilan yuritiladi?



A) Favorskiy A.E.

B) Nesmeyanov A.N.

C) Kazanskiy B.A.

D) Reppe V.

4, 118-119-b.

16. Alkinlarning qaysi biri kumush oksidning ammiakdagi eritmasi bilan reaksiyaga kirishmaydi?

- A) 1-butin B) 1-pentin C) atsetilen D) 2-butin
4, 121-122-b.

17. Natriy atsetilenidlaridagi C–Na bog`ining tabiati qanday?

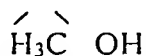
- A) semipolyar bog` B) kuchsiz qutblangan kovalent bog`
C) ionli bog` D) kuchli qutblangan kovalent bog`
3, c. 155-156.

18. Brensted-Louri ta`rifiga ko`ra birikmalarning qaysi biri nisbatan kuchli kislota xossalarini namoyon qiladi?

- A) NH_3 B) $\text{CH}_3\text{--CH}_2\text{--CH}_3$ C) $\text{CH}_3\text{--C}\equiv\text{CH}$ D) $\text{CH}_3\text{--CH=CH}_2$

15, c. 239-240.

19. KOH ishtirokida past bosim ostida atsetilen va monoalkilatseti-lenlar ketonlarga birikib, uch bog` saqlagan uchlamchi spirtlarni hosil qila-di (A.E.Favorskiy). Shunday sharoitda $\text{CH}_3\text{--CH}_2\text{--C--C}\equiv\text{C--CH}_3$ tuzilishli



spirtni qaysi keton va alkindan olish mumkin?

- A) metiletilketon va metilatsetilendan B) metiletilketon va atsetilendan

- C) dietilketon va atsetilendan D) atseton va etilatsetilendan
4, 117-118-b.

20. Mis oksidning ammiakdagi eritmasi bilan qizil rangli cho`kma, katalitik gidrogenlanganda ikki mol vodorodni biriktirib, 2-metilgeptan, kaliy per-manganat bilan kislotali muhitda oksidlaganda esa, 5-metilgeksan kislota hosil qiladigan C_8H_{14} tarkibli uglevodorodning tuzilishini aniqlang.

- A) 6-metil-2-geptin B) 6-metil-3-geptin
C) 6-metil-1-geptin D) 5-metil-1-geptin

21. IQ-spektrlarida $\text{C}\equiv\text{C}$ va $\equiv\text{C--H}$ bog`larning valent tebranishlari qaysi sohalarda kuzatiladi?

- A) $\nu_{\text{C}\equiv\text{C}}$ 2100-2250 sm^{-1} , $\nu_{\equiv\text{C--H}}$ 3260-3330 sm^{-1}
B) $\nu_{\text{C}\equiv\text{C}}$ 2280-2310 sm^{-1} , $\nu_{\equiv\text{C--H}}$ 3350-3370 sm^{-1}
C) $\nu_{\text{C}\equiv\text{C}}$ 2315-2328 sm^{-1} , $\nu_{\equiv\text{C--H}}$ 3380-3395 sm^{-1}
D) $\nu_{\text{C}\equiv\text{C}}$ 2020-2038 sm^{-1} , $\nu_{\equiv\text{C--H}}$ 3100-3130 sm^{-1}

3. c. 149.

22. PMR- spektrlarda $\equiv\text{C}-\text{H}$ vodorod atomining kimyoviy siljishi nechaga teng?

A) 1,5-1,6 m.h. B) 1,7-2 m.h. C) 2,1-2,2 m.h. D) 2,3-2,4 m.h.

3. c. 149.

23. C_6H_{10} tarkibli uglevodorod quyidagi xossalarga ega: a) kumush oksidning ammiakdagi eritmasi bilan reaksiyaga kirishmaydi; b) bromli suvni rangsizlantiradi; v) yaqin UB-sohada yutmaydi; g) IQ-spektrida 3300-3100, 2300-2100 va 1700-1600 cm^{-1} sohalarda tebranishlar yo'q; d) ozonoliz qilinganda faqat propion aldegid hosil bo'ladi. Uglevodorodning tuzilishini aniqlang.

A) 1-geksin B) 2-geksin C) 3-geksin D) 1,4-geksadiyen

24. C_4H_6 tarkibli uglevodorodning IQ-spektrida 3305 va 2125 cm^{-1} sohalarda intensiv valent tebranishlari bor. Shu birikmaning tuzilishini aniqlang.

A) butin-1 B) butadiyen-1,3 C) butin-2 D) butadiyen-1,2

17. c. 66

25. $\text{R}-\text{C}\equiv\text{CH}$ tipidagi 1-alkinlar PMR-spektrida $\equiv\text{CH}$ protoni qaysi maydonda signal beradi?

A) δ 3,5-4,4 m.h. B) δ 2,3-3,0 m.h.

C) δ 1,3-1,5 m.h. D) δ 5,5-5,9 m.h.

17. c. 79

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	C	11	C	21	A
2	A	12	D	22	B
3	C	13	D	23	C
4	D	14	B	24	A
5	B	15	D	25	B
6	C	16	D		
7	C	17	C		
8	D	18	C		
9	C	19	A		
10	D	20	C		

V BOB. GOMOFUNKSIONAL BIRIKMALAR

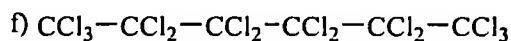
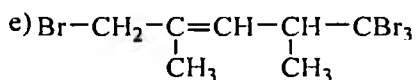
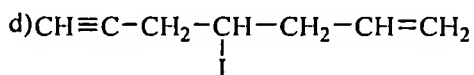
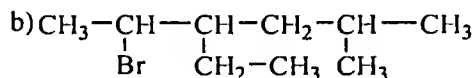
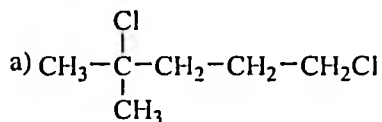
Gomofunksional birikmalar nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari o'ld masala va mashqlar

1. Alkilgalogenidlar molekulasidagi galogen atomlari qanday induktiv effektni namoyon qiladi? Uglevodorod radikallari-chi? Misollar bilan tushuntiring.

2. Molekulaning dipol momenti bilan undagi atom va guruhlarining induktiv ta'siri orasida qanday bog'liqlik bor? CH_3Cl ; $\text{CH}_3\text{-CH}_2\text{Cl}$; $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{Cl}$; $(\text{CH}_3)_2\text{CHCl}$ qatordagi molekular dipol momentining kattalashib borishini hisobga olgan holda: a) xlorning induktiv effekt kuchini, b) uglevodorod radikallarining induktiv effekt kuchlarini taqqoslang.

3. H ; $-\text{CH}_3$; $-\text{Cl}$; $\text{CH}_2=\text{CH}-$; $-\text{CN}$; $\text{HC}\equiv\text{C}-$; NO_2 ; $-\text{Br}$; $-\text{F}$; $-\text{I}$ atom va guruhlarini manfiy induktiv effekt kuchining ortib borishi tartibida joylashtiring.

4.



birikmalarni sistematik nomenklaturaga binoan nomlang.

5. a) ikkilamchi butilneopentilbrommetan; b) izobutenilizoamildixlormetan; d) metilpropenilyodmetan; e) izopropenil ikkilamchi butilxlormetan; h) izopropilpropargilizogeksilbrommetanning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang.

6. a) 1,4-dibrom-3,4-dimetil-6-neopentildodekan, b) 1,5-dixlor-4,6,7-trimetil-5-etil-2-nonen; d) 2-ftorononaxlorbutan, e) 3,4,5-trixlor-3,6,8-trimetil-6-izopropil-1-nonin; h) perftor-1,3-butadiyenning tuzilish formulalarini yozing.

7. Quyidagi birikmalarning tuzilish formulalarini yozing: a) perftor-1,4-pentadien; b) metilpropenilpropinilxlormetan; d) 3,4,5-tribrom-3,6,8-trimetil-6-etil-1-nonin; e) 3-yodpentin-1.

8. C_3H_5Cl tarkibli nechta modda bo'lishi mumkin? Bu moddalarning tuzilish formulalarini yozing.

9. $C_5H_{11}Cl$ tarkibli izomerlarning tuzilish formulalarini yozing va ularni sistematik nomenkalaturaga binoan nomlang.

10. $C_6H_{13}Br$ tarkibli monogalogenalkanlar izomerlarining tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang.

11. a) $C_3H_4Cl_2$ tarkibli ochiq zanjirli izomerlarning, b) $C_5H_{10}Cl_2$ tarkibli normal zanjirli izomerlarning tuzilish formulalarini yozing.

12. a) 1,3-dixlorallen, b) 1,4-dixlor-1,2,3-butatriyenning har birida nechtadan geometrik izomer bo'lishi kerak? Ularning tuzilish formulalarini yozing.

13. a) optik faol modda; b) xirallik; d) asimmetrik uglerod atomi; e) enantiomerlar (antipodlar); h) diastereomerlar; i) ratsematlar; j) mezoformalar; k) konfiguratsiya nimani anglatadi?

14. Hidrolizlanganda metiletiketona ($CH_3-CO-CH_2-CH_3$) hosil qiladigan $C_4H_8Br_2$ tarkibli moddaning tuzilishini aniqlang.

15. C_4H_9Br tarkibli hamma izomer birikmalarning struktura formulalarini keltiring. Qaysi izomerda xiral markaz mavjud? Shu birikma uchun enantiomerlar formulasini yozib R,S tartibi bo'yicha konfiguratsiyasini ko'rsating.

16. 3,4-dibromgeksan enantiomerlar holida mavjud bo'la oladimi? Mezo-forma holida-chi? Ularning proeksion formulalarini yozing va konfiguratsiyalarini R,S-tizim bo'yicha belgilang.

17. 2-brombutan; b) 3-brom-3-metilgeptan; v) 2-brom-3-metilbutan; g) 1-brom-2,2-dimetilpentanning proeksion formulalarini yozing. Bularning qaysilari enantiomerlar holida mavjud bo'lishi mumkin? Enantiomerlar konfiguratsiyasini R,S-tizim bo'yicha belgilang.

18. Degidroxlorlanganda 2-metil-2-penten, gidrolizlanganda esa uchlamchi spirt hosil qiladigan $C_6H_{13}Cl$ tarkibli moddaning tuzilish formulasini aniqlang.

19. Alkanning monobromli hosilasida bromning massa ulushi 52,98% ni tashkil qiladi. Alkanning molekulyar formulasini aniqlang.

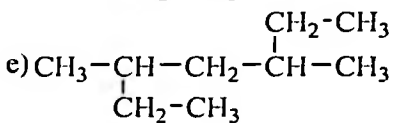
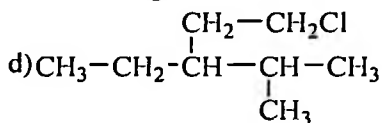
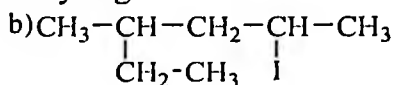
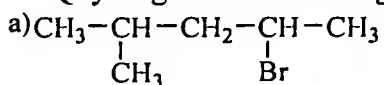
20. Butening ftorli hosilasi 4,545% vodorod saqlasa, uning molekulyar formulasini toping. Shu moddaning sis-trans izomerlari bo'lgan uchta izomerining formulasini yozing.

21. $C_2H_3Br_3$ tarkibli moddaning YaMR 1H -spektrida δ 4,3 m.h. (dublet) va 5,9 m.h. (triplet) sohasida signallar bor. Moddaning tuzilishini aniqlang.

22. $C_4H_4Cl_2$ tarkibli moddaning YaMR 1H -spektrida yagona signal (δ 4,2 m.h.) bor. Shu moddaning tuzilishini aniqlang.

23. C_4H_9Br tarkibli hamma izomer birikmalarning struktura formulasini keltiring. Radikallar nomiga bromid so'zini qo'shib xalqaro nomlanishga binoan ularning nomini ayting. Birlamchi, ikkilamchi va uchlamchi bromalkanlarni belgilang. Qaysizomerda Xiral markaz bor? Shu birikma uchun enantiomerlar formulasini yozib, R, S tartibi bo'yicha konfiguratsiyasini ko'rsating.

24. Quyidagi birikmalarning nomini ayting:

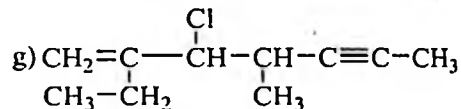
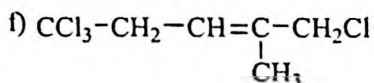
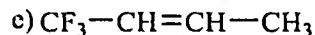
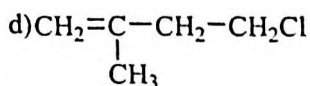
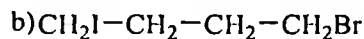
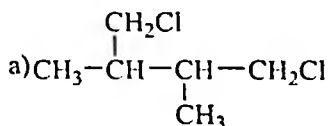


25. $C_4H_3Br_2$ tarkibli birikmalarning normal izomerlarini yozing va ularning nomini ayting. Vitsinal va geminal dibrombutanlarni ko'rsating. Optik izomerlarning Fisher formulasini keltiring. Eritro-, treo- va mezo- shakllarni ko'rsating.

26. Quyidagi birikmalarning struktura formulasini yozing: a) 1,4-dixlor-4-metilpentan; b) 1-brom-4-xlor- 2,3-dimetilbutan; d) 5-brom-3-metilpenten-1; e) 5-ftor- pentin-1; f) 3-yodpentan-1-in-4. Gruppalarning kattaligiga e'tibor bering

27. Propilen monoxlorli hosilalarining radikal- lar bo'yicha va xalkaro nomlanishga ko'ra nomini ayting. Qanday birikmalar sis- va trans-izomer ko'rinishida bo'lishi mumkin? Bu izomerlarning formulasini keltiring.

28. Birikmalarning xalqaro nomlanishga ko'ra nomini ayting:



29. Quyidagi uglevodorodlarning nechtasidan uchxlor- li hosilalar olish mumkin: a) propan; b) propilen; d) dimetilatsetilen? Ularning struktura formulasini yozing va nomini ayting.

30. Quyidagi birikmalarning struktura formulasini keltiring: a) vinilxlorid; b) allilbromid; d) propar- gilyodid; e) pentametilbromid; f) xloroform; g) to'rtxlorlik uglerod; h) perftoretillen.

31. Metilxlorid molekulasining atom-orbital modelini ko'rsating. C-H va C-Cl kimyoviy bog'larni xarakterlang; uzunlik, energiya, qutblanish. Qanday bog' oson geterolitik parchalanadi? C-Cl- bog'i uchun σ va σ^* MO ni tasvirlang.

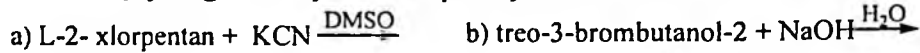
32. Galogenalkanlardagi C-F, C-Cl, C-Br va C-I bog'larning mustahkamligi va qutblanish darajasini solishtiring. Bu qatorda bog'larning geterolitik parchalanishga munosabati va hosil bo'ladigan galogenid- anionlarning barqarorligi qanday o'zgaradi?

33. Vinilxlorid molekulasini tuzilishini kuzating. Nima sababdan vinilxloridda (0,169 nm) eti. xloridga (0,177 nm) nisbatan C-Cl bog' qisqa. Qaysi holda bog' oson uzilib, xlor anionni hosil qiladi?

34. Quyidagi o'zgarishlarni qanday erituvchilarda o'tkazgan maqul (benzol, suvli spirt, dimetilsulfoksid, efir):



35. Quyidagi reaksiyalardan qanday mahsulotlar hosil bo'ladi:



36. Uchlamchi - butilxloridning suv bilan reaksiyasi mexanizmi S_N1 ko'rinishda ekanligini izohlang. Potensial energiyasining o'zgarish diagrammasini keltiring. Egri chiziqdagi ekstremumlar

nimani ko'rsatadi? S_N1 mexanizmining yaxshi o'tishi uchun ta'sir etadigan faktorlar- ni aniqlang.

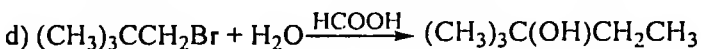
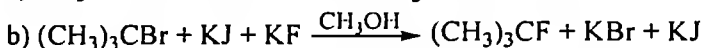
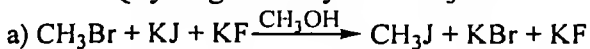
37. 3-brom-3 metilgeksanning optik faolligi uning gidrolizi vaqtida 70 foizga kamayadi. Buning sababini tushuntiring.

38. (R,R)-4-xlor-3,4-dimetilgeksanol-3 nini gidrolizidan stereokimyoviy hosilasini ayting.

39. S_N1 va S_N2 reaksiyalar uchun: a) jarayon kinetikasi; b) bosqich stereokimyosi; d) reaksiya tezligining uglevodorod radikali tuzilishiga galogenning tabiati, nukleofil reagentining xarakteri erituvchining tabiatiga bog'liqligini taqqoslang.

40. Tarkibida C₄H₉Br bo'lgan izomerlarni: a) 2 reaksiyasi; b) reaksiyasida reaksiya qobiliyatining ortishi tartibiga qarab joylashtiring. Javobingizni tushuntiring.

41. Quyidagi reaksiyalar natijalarini tushuntiring:

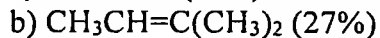
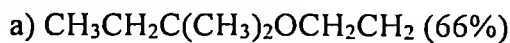


42. 3-xlorbuten-1 etil spirti bilan reaksiyasidan 3-etoksibuten-1 va 1-etoksibuten-2 aralashmasi hosil bo'ladi. Agar reaksiyani natriy etilatning spirdagi eritmasi bilan o'tkazilsa, unda 3-etoksibuten-1 hosil bo'ladi. Bu faktlarni tushuntiring.

43. 2-brompropanni kaliy gidroksidning spirdagi eritmasi bilan qizdirish natijasida, 29 % propanol-2 va 71 % propen hosil bo'ladi. Olingan natijalarni izohlang.

44. Quyidagi birikmalarning degidrogalogenlanishidan (KOH, spirt, t°) qanday alkenlar olinadi: a) 2-brom- pentan; b) 1-brompentan; d) 3-xlor-2-metilpentan. Zaytsev qoidasini ta'riflang. Nazariy kihatdan izoh bering.

45. Etanol bilan 2-brom-2-metilbutanning 25°C harorat ta'siridan uch xil birikma olinadi:

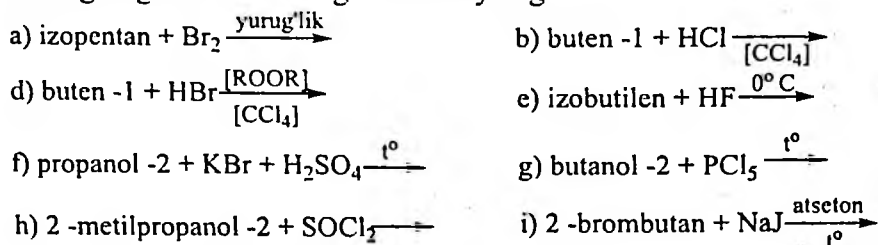


Ularning hosil bo'lish mexanizmini tushuntiring. Asosiy hosila (b) birikmasi yoki (d) birikmasi bo'lishi uchun reaksiyaning sharoitini qanday o'zgartirish kerak?

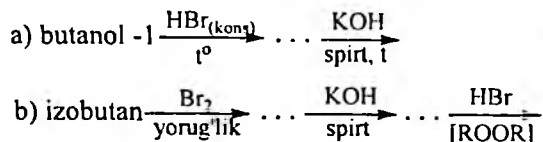
46. 3-yod-3,4-dimetilgeksan suv bilan qaynatilganda alken hosil bo'ladi? Reaksiya sxemasini yozing va mexanizmini tushuntiring. Hosil bo'ladigan alkenning konfiguratsiyasi haqida nima deyish mumkin?

47. E1 va E2 reaksiyalari uchun: a) jarayon kinetikasi; b) bosqich soni; d) oralik mahsulotlar soni; e) o'tish holatidagi zaryadlarning taqsimlanishi; f) regioizlanuvchanligini solishtiring. Reaksiyani aniq misollarda ko'rsating.

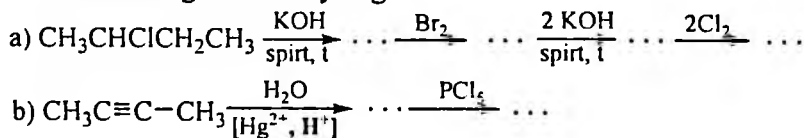
48. Quyidagi reaksiyalarda hosil bo'ladigan monogalogenalkanlarning nomini ayting:



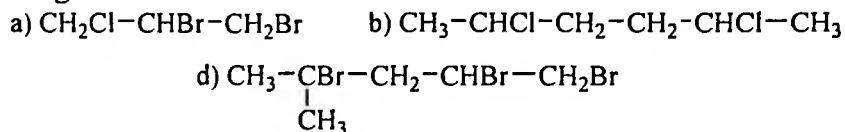
49. Quyidagi o'zgarishlar natijasida qanday birikmalar hosil bo'ladi:



50. Quyidagi o'zgarishlar mobaynida hosil bo'ladigan birikmalarning nomini ayting:



51. Propilendan quyidagi birikmalarni olish usullarini taklif eting:



52. C₄H₉Br tarkibli birikma gidrolizidan birlam- chi spirt olinadi, degidrobromlanishi va qayta gidrobromlanishidan esa uchlamchi

bromli hosila olinadi. Boshlang'ich moddaning tuzilish formulasini aniqlang.

53. $C_5H_{11}Br$ birikma degidrobromlanib, olingan mahsulot ozonolizidan chumoli va izomoy aldegidlari aralashmasi hosil bo'ladi. Boshlang'ich galogenalkanning tuzilishini aniqlang.

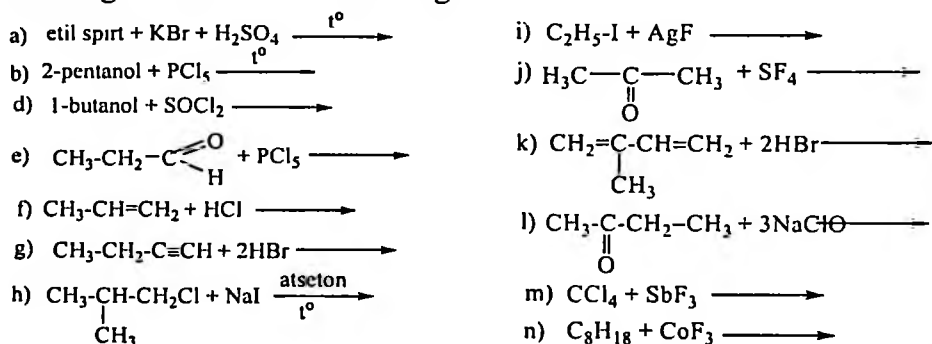
54. Ishqorning suv-spirтли eritmasi bilan reaksi- yaga kirishmaydigan, lekin HBr bilan reaksiyaga kirishib, 1,2-dibrompropan hosil qiladigan C_3H_5Br birikmasining tuzilish formulasi qanday?

55. Ammiakning spirtدagi eritmasi bilan kristall modda hosilasiga ishqorning suvdagi eritmasi ta'sir ettirilsa, (R)-2-aminobutan hosil qiladigan C_4H_9N tarkibli moddaning tuzilishini va konfiguratsiyasini aniqlang.

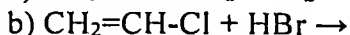
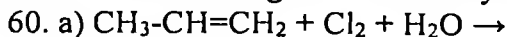
56. Buten-1 yuqori haroratda xlorlanishidan C_4H_7Cl birikmasi hosil bo'lib, uning gidrolizidan C_4H_8O tarkibli ikki xil birikma hosil bo'ladi. C_4H_7Cl va C_4H_8O birikmalarining tuzilishini aniqlang.

57. 2-propanol va boshqa reagentlardan foydalanib a) 1,2-dixlorpropan, b) 1-xlorpropen, d) 2-xlorpropenni sintez qiling.

58. Quyidagi reaksiyalarning tenglamalarini yozing va hosil bo'ladigan birikmalarni nomlang:

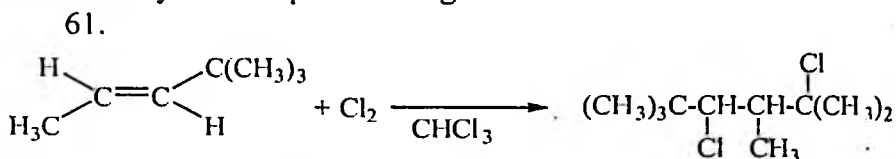


59. Izopentanga xlor ta'sir qilinganda hosil bo'ladigan barcha monoxlorli hosilalarning formulalarini yozing va ularni nomlang.



reaksiyalarning har birida ikki xildan mahsulot hosil bo'ladi. Oraliq karbokationlarning barqarorligini taqqoslab, qaysi mahsulot

nisbatan ko'p hosil bo'lishini ayting. Javobingizni reaksiyalar mexanizmini yozish orqali asoslang.



reaksiyaning mexanizmini yozing.

62. To'yinmagan uglevodorodlar va boshqa reaktivlardan foydalanib, a) 2,2-dixlorbutan, b) 1-xlor-2-buten, d) 2-xlor-1,3-butadiyen, e) 4-xlor-1-buten, h) 2,3-dixlorbutan, i) 3-xlor-2-metil-1-propen, j) 1,1-dixloreteni sintez qiling.

63. a) 1,1-dixlorpenten, b) 1,1-dibrom-3-metilbutan, d) 3,3-dibrom-3-metilpentan, e) dixlorizopropilizobutilmetanni qaysi aldegid va ketonlardan olish mumkin?

64. a) metil xlorid; b) etil xlorid; d) xloroform; e) tetraxlorometan; h) 2-xlor-1,3-butadiyen, i) tetraftoretlen; j) vinil xlorid; k) yodoform; n) dixloreten sanoat miqyosida qanday olinadi? Bu galogenli hosilalar qayerlarda ishlatiladi?

65. 1 mol vodorod xlorid hosil bo'lgan bo'lsa, 0,5 mol etilen bilan xlorning qanday miqdori reaksiyaga kirishadi?

66. Kalsiy karbonat va uglerod va boshqa istalgan noorganik moddalardan foydalanib: a) 1,2-dixloreten; b) 1,1-dixloreten olish reaksiyalarining tenglamalarini yozing.

67. Alkanni bromlash natijasida ushbu alkanning 21,8 g og'irligidagi mono-hosilasi hosil bo'ldi. Ushbu miqdordagi alkanni xlorlashda massasi 12,9 g bo'lgan ushbu alkaning monoxlorli hosilasi hosil bo'ldi. Alkanning molekulyar formulasini aniqlang.

68. n-propil xlorid va a) o'yuvchi kaliyning spirtidagi eritmasi; b) o'yuvchi natriyning suvdagi eritmasi; d) natriy; e) magniy (efir); f) natriy yodid (atsetonda); g) ammiak; h) kumush atsetat; i) natriy sianid; j) natriy metilatsetilenid; k) p-propilamin, n) dietilamin; m) kumush nitrat orasidagi reaksiyalar tenglamalarini yozing va hosil bo'ladigan asosiy organik moddalarni nomlang.

69. n-butil xlorid va a) NaOH ning suvdagi eritmasi b) $\text{C}_2\text{H}_5\text{ONa}$, d) KOH ning spirtidagi eritmasi; e) $\text{CH}_3-\text{CH}_2-\text{C}\equiv\text{C}-\text{N}$ - orasida boradigan asosiy va qo'shimcha reaksiyalar tenglamalarini yozing.

70. CH_3Br va $(\text{CH}_3)\text{CBr}$ ning ishqoriy gidrolizlanish reaksiyalari

mexanizmlarini keltiring.

71. Quyidagi birikmalarni nukleofil o'rin olish reaksiyalariga kirishish qobiliyatining o'sib boorish tartibida joylashtiring. Bularning molekulasidagi xlor atomining harakatchanligi nima uchun turlicha?

- a) $\text{CH}_3\text{-CH=CH-Cl}$ b) $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-Cl}$
d) $\text{CH}_3\text{-C}\equiv\text{C-Cl}$ e) $\text{CH}_3\text{-CH=CH-CH}_2\text{Cl}$

72. $\text{C}_4\text{H}_9\text{Br}$ tarkibli barcha izomer brombutanlarni $\text{S}_{\text{N}}2$ reaksiyalarga kirishish qobiliyatining o'sib boorish tartibida joylashtiring.

73. Izobutil xlorid, bromid va yodidlarni oson gidrolizlanishi tartibida joylashtiring.

74. a) 1-brompentan, b) 2-brompentan, d) 2-brom-2-metilbutan. e) 1-brom-2-penten, h) metil bromidni $\text{S}_{\text{N}}1$ reaksiyalariga kirishish qobiliyatining o'sib boorish tartibida joylashtiring.

75.

- a) izoamil yodid + $\text{AgOH} \longrightarrow$
b) izobutilen $\xrightarrow{+\text{HCl}}$ A $\xrightarrow{\text{NaOH (suvli)}}$ B $\xrightarrow{2\text{HI}}$ D
d) propilen $\xrightarrow{+\text{HCl}}$ A $\xrightarrow{\text{Mg (efir)}}$ B
e) metilatsetilen $\xrightarrow{\text{suyul. NH}_3, +\text{Na}}$ A $\xrightarrow{n\text{-C}_3\text{H}_7\text{I}}$ B $\xrightarrow{2\text{H}_2/\text{Pt}}$ D
f) allil bromid $\xrightarrow{+\text{Na}}$ A $\xrightarrow{\text{HBr}}$ B $\xrightarrow{\text{KOH (suvli)}}$

reaktsiyalarning tenglamalarini yozing.

76. a) 3-xlor-2-metilpentan; b) 1,4-dixlor-4-metilpentan; d) 1,1,2,2-tetraxlorretandan bir molekula HCl ajralganda qanday moddalar hosil bo'ladi?

77. a) 2-xlorgeksan; b) 2-xlor-2-metilgeksan; d) 2,4-dixlor-4-metilgeksan; e) 3-brom-4-xlorgeptan degidrogalogenlanganda asosiy mahsulot sifatida qanday moddalar hosil bo'ladi?

78. 1-xlor-2-metilbutan va boshqa reaktivlardan foydalanib. a) birlamchi spirt; b) alken; d) oddiy efir; e) 10 ta uglerod atomni tutgan izotuzilishli alkanni sintez qiling. Bu reaksiyalar qanday sharoitda boradi?

79. Alknlgalogenndlarning monomolekulyar ajralib chiqish (E_1) va bimolekulyar ajralib chiqish (E_2) reaksiyalari mexanizmlarini aniq misollar bilan tushuntiring.

80. Atsetilen va boshqa reaktivlardan foydalanib, 1,2-dibrombutanni ikki xil usul bilan sintez qiling.

81. Noma'lum to'yinmagan uglevodorodni xlorlab olingan $C_2H_4Cl_2$ tarkibli modda piroliz qilinganda vinil xlorid va vodorod xlorid, gidrolizlanganda esa etilenxloridrin ($HO-CH_2-CH_2-Cl$) va etilenglikol ($HO-CH_2-CH_2-OH$) hosil bo'ladi. $C_2H_4Cl_2$ tarkibli moddaning tuzilish formulasini aniqlang.

82. Degidroxlorlanganda 2-metil-2-penten, gidrolizlanganda esa uchlamchi spirt hosil qiladigan $C_6H_{13}Cl$ tarkibli moddaning tuzilish formulasini aniqlang.

83. Gidrolizlanganda metiletiketona ($CH_3-CO-CH_2-CH_3$) hosil qiladigan $C_4H_8Br_2$ tarkibli moddaning tuzilish formulasini aniqlang.

84. Gidroxlorlanganda 1,3-dixlor-3-metilbutan, katalitik gidrogenlanganda esa 1-xlor-3-metilbutan hosil qiladigan C_5H_9Cl tarkibli moddaning tuzilish formulasini aniqlang.

85. *n*-Butil bromid va a) KOH ning suvdagi suyultirilgan eritmasi; b) NaOH ning spirtidagi eritmasi; v) $C_2H_5-C\equiv N$ orasida boradigan asosiy va qo'shimcha reaksiyalar tenglamalarini yozing.

86. Alkanning monobromli hosilasini natriy bilan qizdirganda alkan hosil bo'ladi, alkan bug'ining zichligi havoga nisbatan 2 ga teng. Boshlang'ich alkanni aniqlang.

87. 2,3-dimetil-2-xlorbutan bilan a) NaOH ning suvdagi 10 % li eritmasi; b) KOH ning spirtidagi eritmasi reaksiyaga kirishganda qanday ajralish va almashinish mahsulotlari hosil bo'ladi?

88. Qanday kimyoviy o'zgarishlar orqali xloretendan metan olish mumkin?

89. Quyidagi geminal digalogenli hosilalarni qanday aldegid va ketonlardan olish mumkin: a) dixlorizopropilizobutilmetan; b) 1,1-dibrompentan; v) 3,3-dixlor-2-metilpentan; g) 1,1-dixlor-3-metilgeksan?

90. a) 2-metil-2-xlorbutan; b) 2-metil-3-xlorbutan; v) 2,3-dimetil-2-brombutan degidrogalogenlananda; a) $(CH_3)_2CBr-CH_2-CH_2Br$; b) $(CH_3)_3C-CHCl-CH_2Cl$ degalogenlanganda qaysi uglevodorodlar hosil bo'ladi? Bunda qaysi reaktivlar ishlatiladi? Hosil bo'lgan birikmalarni nomlang.

91. Quyidagi atamalar nimani anglatadi: a) *mezo*-shakllar: b) *treo*-izomer; v) *eritro*-izomer? Misollar keltiring.

92. 3,3,3-triflorpropenga vodorod bromid birikishi reaksiyasi tenglamasini yozing.

93. Propin va izomer monoxloralkenlar bug'larining aralashmasi 145°C va 96 kPa bosimda 18 l hajmni egallaydi, mo'l miqdordagi kisloroda yondirilganda esa 18.0 g suv hosil qiladi. Monoxloralkenlarning mumkin bo'lgan barcha izomerlarining formulalarini yozing. Boshlang'ich aralashmaning havoga nisbatan zichligi 1,757 ga teng bo'lsa, uning yonishida hosil bo'lgan mahsulotlar bilan 1,7% li kumush nitratning (zichligi 1,01 g/ml) qanday hajmi bilan reaksiyaga kirisha oladi?

94. $C_2H_3Br_3$ tarkibli moddaning PMR-spektrida 4,3 (dublet) va 5,9 m.h.(triplet) signallar bor. Bu moddaning tuzilishini aniqlang.

95. $C_3H_3Cl_3$ tarkibli moddaning PMR-spektrida quyidagi signallar bor (τ -shkalasida): 4,2 m.h. (dublet) va 5,8 m.h.(triplet). Bu moddaning tuzilishini aniqlang.

Gomofunksoinal birikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. $C_4H_8Cl_2$ tarkibli birikmaning nechta izomeri bor?

A) yettita B) sakkizta C) to'qqizta D) o'nita

2. $C_3H_4Br_2$ tarkibli moddaning izomerlari soni nechta?

A) to'rtta B) beshta C) oltita D) yettita

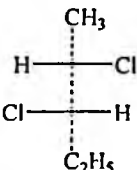
3. 5-brom-3-metil-1-pentenning tuzilish formulasini ko'rsating.

A) $BrCH=CH-CH(CH_3)CH_2CH_3$

B) $CH_2=CHCH(CH_3)CH_2CH_2Br$

C) $CH_3CH=C(CH_3)CH_2CH_2Br$

D) $CH_3CH_2CH(CH_3)CH=CHBr$

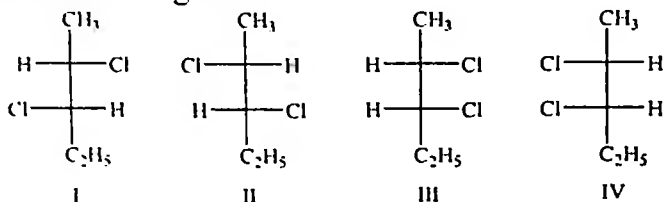
4.  tuzilishli birikmani R,S-nomenklaturaga ko'ra nomlang.

A) (2R,3R)-2,3-dixlorpentan

B) (2S,3R)-2,3-dixlorpentan

C) (2R,3S)-2,3-dixlorpentan D) (2S,3S)-2,3-dixlorpentan
 15. c. 87-91, 21. c. 218

5. Quyidagi birikmalarning qaysilari bir-biriga enantiomer va qaysilari bir-biriga diastereomer?

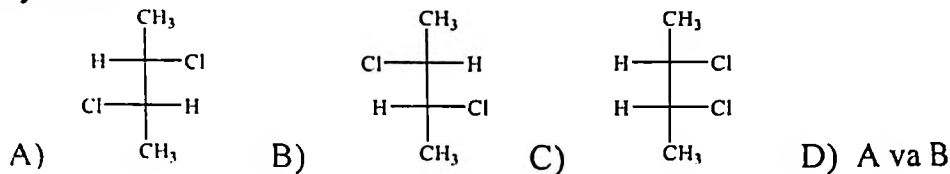


A) I va III bir-biriga enantiomer; I va II bir-biriga diastereomer;
 B) I va IV bir-biriga enantiomer; III va IV bir-biriga diastereomer;
 C) I va II, shuningdek III va IV bir-biriga enantiomer; I va III, IV, shuningdek II va III, IV bir-biriga diastereomer;

D) I, II, shuningdek III va IV bir-biriga ham enantiomer, ham diastereomer;

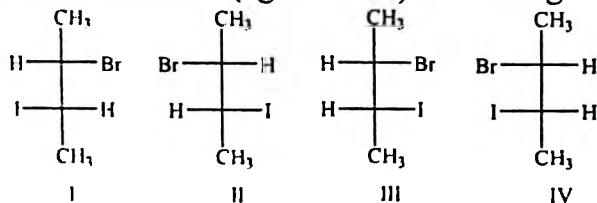
4. 163-b.

6. 2,3-dixlorbutanning stereoizomerlaridan qaysi biri mezo-forma deb aytiladi?



4. 163-b.

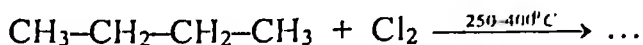
7. 2-brom-3-yodbutanning quyidagi fazoviy izomerlaridan treo- va eritroizomerlarni (agar bo'lsa) ko'rsating:



A) treo-izomerlar yo'q;
 B) eritro-izomerlar yo'q;
 C) I va II treo-, III va IV esa eritro-izomerlar;
 D) I va II eritro-, III va IV esa treo-izomerlar;

4. 163-b.

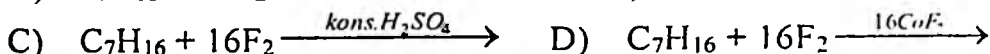
8. Quyidagi reaksiya natijasida qanday monoxloralkan hosil bo'ladi?



- A) faqat n-butilxlorid
 B) faqat ikkilamchi butil xlorid
 C) n-butil xlorid va ikkilamchi butil xlorid aralashmasi
 D) uchlamchi butil xlorid va ikkilamchi butil xlorid aralashmasi

15, c. 444

9. Perftorgeptan keltirilgan reaksiyalarning qaysi biri bilan olinadi?



4, 168-b.



Reaksiya mahsulotining formulasini aniqlang:

- A) $\text{CH}_3\text{CHF}\text{COC}(\text{CH}_3)_3$ B) $\text{CH}_3\text{CF}_2\text{COC}(\text{CH}_3)_3$
 C) $\text{CH}_3\text{CH}_2\text{CF}_2\text{C}(\text{CH}_3)_3$ D) $\text{CH}_3\text{CHF}\text{CF}_2\text{C}(\text{CH}_3)_3$

3, c. 222



Reaksiya asosiy mahsuloti formulasini aniqlang:

- A) $\text{CH}_3\text{CHClCH}_2\text{OH}$ B) $\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{Cl}$
 C) $\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{OH}$ D) $\text{CH}_3\text{CHClCH}_2\text{Cl}$

3, c. 222

12. Reaksiyalarning qaysi biri alkilgalogenidlar uchun xarakterli (tipik) hisoblanadi?

- A) S_R B) S_N C) S_E D) A_R

4, 150-b; 15, c. 446

13. $\text{C}_4\text{H}_9\text{Br}$ tarkibli izomer brombutanlarning qaysi biri S_N2 reaksiyalariga eng oson kirishadi?

- A) n-butil bromid B) izobutil bromid
 C) ikkilamchibutil bromid D) uchlamchibutil bromid

4, 150-152-b; 18, 132-135-b.

14. Keltirilgan birikmalarning qaysi biri S_N1 reaksiyalariga eng oson kirishadi?

- A) 1-brompentan B) 2-brompentan
 C) 2-brom-2-metilbutan D) metilbromid

4, 153-156-b; 18, 132-135-b.

15. Alkilbromidlardan qaysi birining 80% li etanolda 55°C da S_N1-mexanizm bo'yicha gidrolizlanishi eng oson kechadi?

- A) (CH₃)₃C-Br B) (CH₃)₂CH-Br C) CH₃-CH₂-Br
D) CH₃-Br

4, 150-156-b; 18, 133-b.

16. Alkil galogenidlardan qaysi birlari nukleofil o'rin olish reaksiyalariga oson kirishadi?

- A) alkil yodidlar B) alkil bromidlar
C) alkil xloridlar D) alkil ftoridlar

4, 150-b.

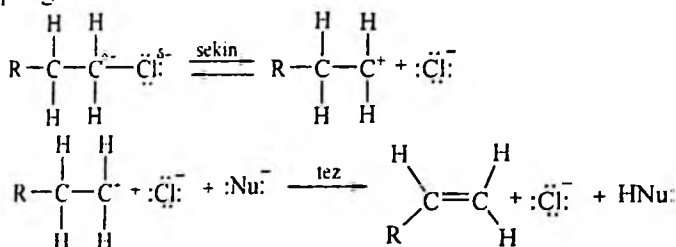
17. 2-bromoktanning gidrolizida gidroksil-ionlar konsentratsiyasi yuqori bo'lganda S_N2-reaksiyasi, past bo'lganda esa S_N1 reaksiyasi kechadi. Qaysi reaksiyada 2-bromoktanning konfiguratsiyasi o'zgaradi? Yana qaysi birida 2-bromoktan qisman ratsemtatlanadi?

- A) S_N2 va S_N1 reaksiyalarda konfiguratsiya o'zgarmaydi;
B) S_N2 va S_N1 reaksiyalarda faqat ratsemtat hosil bo'ladi;
C) S_N2-reaksiyada konfiguratsiya to'liq o'zgaradi, S_N1-reaksiyada teskari konfiguratsiyali birikma bilan ratsemtat aralashma hosil bo'ladi (qisman ratsemtatlanish);

D) S_N1-reaksiyada konfiguratsiya to'liq o'zgaradi, S_N2-reaksiyada teskari konfiguratsiyali birikma bilan ratsemtat aralashma hosil bo'ladi (qisman ratsemtatlanish);

15. 451-452- va 456-457-b.

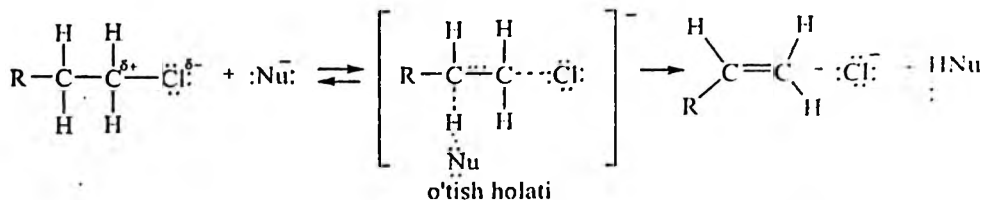
18. Quyidagi sxema bilan kechadigan reaksiyaning mexanizmini aniqlang:



- A) E_N2 B) E_N1 C) E_R D) E_E

3, c. 233

19. Quyidagi sxema bilan kechadigan reaksiyaning mexanizmini aniqlang:



- A) E_R B) E_E C) E_{N1} D) E_{N2}

3, c. 233-234

20. IQ-spektrlarda C-F, C-Cl, C-Br va C-I bog'larning valent tebranishlari qaysi sohalarda kuzatiladi?

- A) $\nu_{\text{C-F}}$ 1450-1000 sm^{-1} ; $\nu_{\text{C-Cl}}$ 850-550 sm^{-1} ; $\nu_{\text{C-Br}}$ va $\nu_{\text{C-I}}$ 650-500 sm^{-1} ;
 B) $\nu_{\text{C-F}}$ 1650-1560 sm^{-1} ; $\nu_{\text{C-Cl}}$ 920-910 sm^{-1} ; $\nu_{\text{C-Br}}$ va $\nu_{\text{C-I}}$ 700-680 sm^{-1} ;
 C) $\nu_{\text{C-F}}$ 1750-1720 sm^{-1} ; $\nu_{\text{C-Cl}}$ 980-960 sm^{-1} ; $\nu_{\text{C-Br}}$ va $\nu_{\text{C-I}}$ 750-730 sm^{-1} ;
 D) $\nu_{\text{C-F}}$ 1770-1740 sm^{-1} ; $\nu_{\text{C-Cl}}$ 990-970 sm^{-1} ; $\nu_{\text{C-Br}}$ va $\nu_{\text{C-I}}$ 770-750 sm^{-1} ;

17, 42-b.

21. C₂H₃Br₃ tarkibli moddaning PMR-spektrida quyidagi signallar $\delta=4,3$ m.h. (dublet) va 5,9 m.h. (triplet) bor. Moddaning tuzilishini aniqlang.

- A) 1,1,1-tribrometan B) 1,1,2-tribrometan
 C) 1,2,3-tribrometan D) 1,2,3-tribrometilen

22. 1,2-dixlorpropaning YaMR-spektrida nechta signal bo'lishi kerak?

- A) uchta B) to'rtta C) beshta D) oltita

23. Monoxloralkanlar IQ-spektrlarida C-Cl bog'ning valent tebranishlari qaysi sohada kuzatiladi?

- A) 750-700 sm^{-1} B) 850-800 sm^{-1}
 C) 950-900 sm^{-1} D) 1050-1000 sm^{-1}

8, c. 127

24. Metilxloridining metil guruhi protonlari qaysi maydonda signal beradi?

- A) δ 6,2 m.h. B) δ 5,3 m.h. C) δ 4,1 m.h. D) δ 3,1 m.h.

17, c. 78

25. PMR-spektrida triplet (δ 4,6 m.h.) va dublet (δ 6,05 m.h.) signallar tutgan pentaxlorpropan izomerining tuzilishini aniqlang.

A) 1,1,1,3,3-pentaxlorpropan

B) 1,1,1,2,2-pentaxlorpropan

C) 1,1,2,3,3-pentaxlorpropan

D) 1,1,2,2,3-pentaxlorpropan

17. c. 91

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	C	11	B	21	B
2	B	12	B	22	B
3	B	13	A	23	A
4	D	14	C	24	D
5	C	15	A	25	C
6	C	16	A		
7	C	17	C		
8	C	18	B		
9	D	19	D		
10	C	20	A		

VI BOB. UGLEVODODRODLARNING GIDROKSILLI HOSILALARI SPIRTLAR

Uglevodorodlar gidroksilli hosilalarining nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalariga oid masala va mashqlar

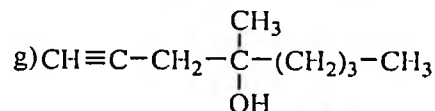
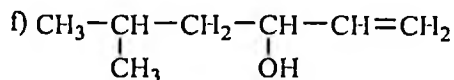
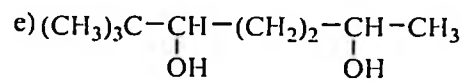
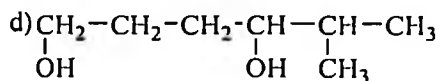
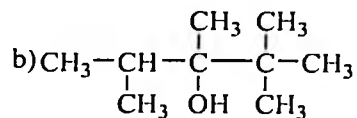
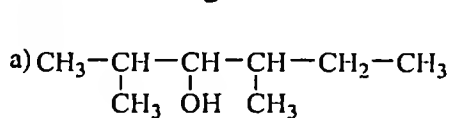
1. Etil spirt, etilen glikol, allil spirt va propargil spirt molekularining elektron tuzilishini yozing.

2. Etil spirt, propan va etil xlorid molekulari tuzilishini taqqoslang. Nega propan suvda erimaydi-yu, etil spirt unda yaxshi eriydi? Nega etil xlorid 12,4°C da qaynagani holda etil spirt nisbatan yuqori haroratda (78,3°C da) qaynaydi?

3. Gomologik qatorda spirtlar molekulyar massasining oshib borishi bilan ularning suvda eruvchanligining kamayishiga sabab nima?

4. Spirtlardagi O—H bog'ining geterolitik uzilishidan qanday ionlar hosil bo'ladi? Spirtlarning qaysi xossalari bu jarayon bilan bog'liq?

5. Quyidagi spirtlarni ratsional va sistematik nomenklaturaga binoan nomlang:



6. a) 3-metil-4-geptanol; b) 2-metil-3-etil-3-pentanol; d) 2,3-dimetil-2,3-butandiol; e) 2-propin-1-ol; f) 2,3,4-trimetil-1-geksen-3-ol; g) 6,6-dimetil-2-gepten-4-olning tuzilish formulalarini yozing va ularni ratsional nomenklaturaga binoan nomlang.

7. Quyidagi spirtlarning tuzilish formulalarini yozing: a) 3-metil-4-heptanol; b) 3-etil-2-metil-3-pentanol; v) 2-metil-2-geksanol; g) etilmetilkarbinol.

8. Quyidagi spirtlarning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang: a) metilikkilamchibutilizoamilkarbinol, b) α,α,β -trimetiletilenglikol, d) α -metil- α -izopropenil- β -propargiletilenglikol, e) α -vinil- γ -izobutiltrimetilenglikol, f) α -etinil- δ -neopentiltetrametilenglikol

9. Ikkita birlamchi, ikkita ikkilamchi, birlamchi-ikkilamchi, birlamchi-uchlamchi, ikkilamchi-uchlamchi va ikkita uchlamchi gidroksil guruhini tutgan glikollarga misollar keltiring. Ularni sistematik nomenklaturaga binoan nomlang.

10. $C_5H_{11}OH$ tarkibli izomer spirtlarning tuzilish formulalarini yozing. Ularni gidroksil guruhi bilan bog'langan radikallar bo'yicha, shuningdek, ratsional va sistematik nomenklaturaga binoan nomlang.

11. $C_6H_{13}OH$ tarkibli ikkilamchi isomer spirtlarning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang.

12. $C_7H_{15}OH$ tarkibli uchlamchi izomer spirtlarning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang.

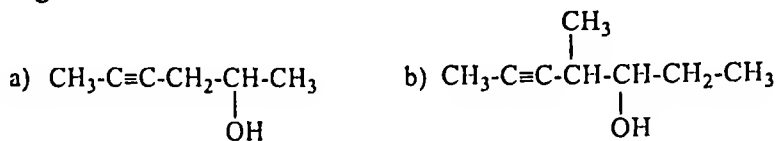
13. C_4H_8O tarkibli to'yinmagan izomer spirtlarning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang.

14. C_4H_6O tarkibli to'yinmagan izomer spirtlarning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang.

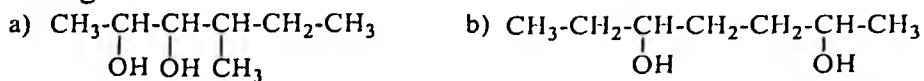
15. $C_5H_{12}O_2$ tarkibli izomer glikollar tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang.

16. $C_6H_{14}O_3$ tarkibli izomer uch atomli spirtlar (alkantriollar) tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang.

17. Quyidagi moddalarni ratsional nomenklatura bo'yicha nomlang



18. Quyidagi moddalarni ratsional nomenklatura bo'yicha nomlang



19. Molekulyar massasi 62 ga teng bo'lgan spirt CH_3MgI bilan reaksiyaga kirishganida 1,33 ml (n.sh.) gaz ajralib chiqdi. Spirt molekulasida nechta faol vodorod atomlari borligini va uning tuzilishini aniqlang.

20. Etanolni glitserindan qanday farqlash mumkin? Javobingizni reaksiyalar tenglamalari bilan tasdiqlang.

21. Uchta metil guruhi bor $\text{C}_5\text{H}_{10}(\text{OH})_2$ tarkibli glikol va uning izomerlari tuzilish formulalarini yozing.

22. Tarmoqlangan zanjirli eng oddiy ikki atomli spirtning formulasini ko'rsating. Bu modda uchun: a) to'rtta izomerini; b) ikkita eng yaqin gomologini formulasini yozing.

23. Glitserinning konsentrlangan xlorid kislota bilan ta'sirlashuv reaksiyasining tenglamasini yozing. Reaksiya mahsulotlarining tuzilish formulalarini ko'rsating.

24. Glyukozadan olingan $\text{C}_2\text{H}_6\text{O}$ tarkibli A modda natriy bilan ta'sirlashib $\text{C}_2\text{H}_5\text{NaO}$ tarkibli birikma hosil qiladi. Konsentrlangan sulfat kislota bilan qizdirganda esa ikki modda: C_2H_4 va $\text{C}_4\text{H}_{10}\text{O}$ hosil bo'lib, ulardan biri bromli suv va kaliy permanganat eritmalari bilan reaksiyaga kirishadi. A modda kislotali muhitda natriy bixromat bilan reaksiyaga kirishib, $\text{C}_2\text{H}_4\text{O}$ tarkibli uchuvchan birikma hosil bo'ladi. A moddani aniqlab, tegishli reaksiyalarning tenglamalarini yozing.

25. $\text{C}_5\text{H}_{12}\text{O}$ tarkibli A modda natriy bilan ta'sirlasha oladi va oksidlanib $\text{C}_5\text{H}_{10}\text{O}_2$ tarkibli moddani hosil qiladi. A modda konsentrlangan sulfat kislota bilan qizdirilganda yagona $\text{C}_{10}\text{H}_{22}\text{O}$ tarkibli modda hosil bo'ladi. A moddaning tuzilish formulasini yozib, tegishli tenglamalarni keltiring.

26. $\text{C}_4\text{H}_{10}\text{O}$ tarkibli A modda vodorod bromid bilan ta'sirlashib $\text{C}_4\text{H}_9\text{Br}$ tarkibli B moddani hosil qiladi. B modda kaliy gidroksidning spirtli eritmasi bilan reaksiyaga kirishib C_4H_8 tarkibli C moddaga aylanadi. C modda fosfat kislota ishtirokida suv bilan birikib $\text{C}_4\text{H}_{10}\text{O}$ moddani hosil qiladi. A moddaning oksidlanish mahsulotlari kumush

ko'zgu reaksiyasini bermaydi. Tegishli reaksiyalarning tenglamalarini yozing.

27. Ikki: A (oddiy modda) va B gazlar (murakkab modda) 300 °C harorat va 10 MPa bosimda (katalizator – rux, xrom, mis oksidlari) reaksiyaga kirishadi. Hosil bo'lgan C modda molekulararo degidratlanish reaksiyasiga kirishib, uchuvchan suyuqlik hosil bo'ladi. A,B,C moddalarni toping. Reaksiyalarning tenglamalarini yozing.

28. Tarkibi noma'lum modda oksidlanib aldegid hosil qiladi, mo'l miqdorda olingan vodorod bromid bilan almashinish reaksiyasiga kirishib 9.84 g mahsulot hosil bo'ladi (unum 80%). Mahsulot bug'ining vodorodga nisbatan zichligi 61,5 ga teng. Olingan moddaning tuzilishini va massasini toping.

29. Bir atomli spirt oksidlanganda kislota hosil bo'lib, uni 10 gramini neytrallash uchun 27 ml 20% li (zichligi 1,18 g/ml) kaliy gidroksid eritmasi talab qilinadi. Spirtning formulasini aniqlab, barcha izomerlarini tuzilish formulalarini yozib, qaysilari oksidlanganda kislota hosil bo'lishini ko'rsating.

30. To'yingan bir atomli spirtga natriy ta'sir ettirilganda 6,72 l (n.sh.) gaz ajraldi. Shunday miqdori degidratlanganda esa, 33,6 g etilen qatori uglevodorodi hosil bo'ldi. Spirtning molekulyar formulasini toping.

31. 30 g noma'lum bir atomli spirt molekulararo degidratlanganda 80% unum bilan 3,6 g suv hosil bo'ldi. Molekulasida ikkita metilen guruhi saqlagan bo'lsa spirtning formulasini toping.

32. Noma'lum tarkibli bir atomli spirtning ma'lum miqdoriga natriy ta'sir ettirilsa 2,24 l (n.sh.) gaz ajralib, hosil bo'lgan organik modda mo'l miqdordagi alkil bromid bilan ta'sirlashganda 20,4 g simmetrik kislorod saqlagan birikma hosil bo'ldi. Qaysi spirt va qanday massada olingan?

33. To'yingan bir atomli spirt yondirilganda ajraladigan karbonat anhidridning hajmi unga natriy ta'sir ettirilganda ajraladigan vodorodning hajmidan 8 baravar ko'p bo'lib, u uchta metil guruhi saqlasa, spirtning formulasini toping.

34. Noma'lum modda natriy bilan sekin reaksiyaga kirishib, natriy dixromat eritmasi bilan oksidlanmaydi, ammo konsentrlangan xlorid kislota bilan tez reaksiyaga kirishib, 33,3% xlor saqlagan alkilxlorid hosil qiladi. Bu birikmaning formulasini toping.

35. 50 g to'yingan bir atomli spirtga konsentrlangan sulfat kislota ta'sir ettirilganda ajralgan gaz 1000 g 5% li kaliy permanganat bilan ta'sirlashganda 26,1 g cho'kma hosil bo'ldi. Spirtning formulasini toping.

36. 15,2 g ikki to'yingan bir atomli spirtlar aralashmasini degidrogenlash uchun 24 g mis(II)-oksidi sarflandi. Hosil bo'lgan aralashmaga kumush oksidining ammiakdagi eritmasi ta'sir ettirilganda 86,4 g cho'kma tushdi. Spirtlarning tuzilishini va aralashmadagi miqdorlarini aniqlang.

37. a) 3-pentanol, b) 2-pentanol, d) 2-metil-2-butanol, e) 2-butanol, f) metilizopropilkarbinol, g) dimetilizopropilkarbinolning qaysilarida xiral markaz bor? Enantiomerlarning (agar ular bo'lsa) proyeksiyon formulalarini yozing va ularni R,S-nomenklaturaga binoan nomlang.

38. $C_4H_{10}O_2$ tarkibli normal tuzilishli isomer α -, β -, γ -glikollarning tuzilish formulalarini yozing. Ularning qaysilari optik faol? Ikkita asimmetrik uglerod atomini tutgan izomerning enantiomerlari va mezoforasi proyeksiyon formulalarini yozing. Ularni R,S-nomenklaturaga binoan nomlang.

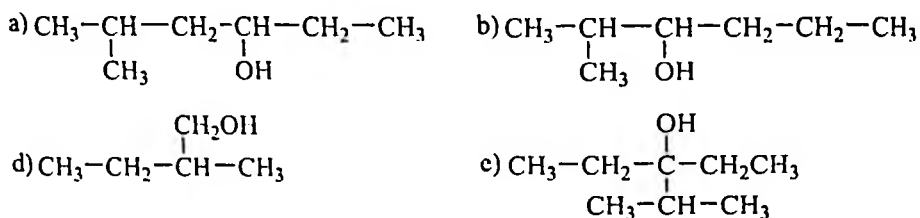
39. a) eritro-1,2,3-butantriol, b) treo-1,2,3-butantriol, d) trans-2-buten-1-ol, e) (R,S)-2,3-geksandiolning proyeksiyon formulalarini yozing.

40. C_3H_8O va $C_4H_{10}O$ tarkibli xamma izomer spirt- larni struktura formulasini yozing. Birlamchi, ikkilamchi va uchlamchi spirtlarni belgilang. Ularni gidroksil gruppaga birikkan radikallari nomi bilan, ratsional (karbinol) va xalqaro nomlanishga binoan nomlang. Qanday spirt molekulasida xiral markaz bor? Shunday molekular uchun enantiomerlarning Fisher formulasini keltiring va ularning R, S va D, L - nomlanishlariga ko'ra nomini ayting.

41. Quyidagi birikmalarning struktura formulasini keltiring. Ularni ratsional nomlanishga ko'ra nomini ayting: a) pentanol-2; b) 2-metilbutanol-2; d) 4-me-tilpentanol-2; e) 2,3-dimetilpentanol-3; f) 2,2,4-trime-tilgeksanol-3.

42. Keltirilgan spirtlarning xalqaro nomlanishga ko'ra nomini ayting: a) dimetilizopropilkarbinol; b) propilizopropilkarbinol; d) etilbutilizobutilkarbinol; e) metil-ikkilamchi-butil-uchlamchi-butilkarbinol.

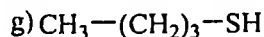
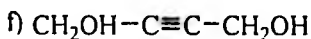
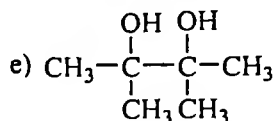
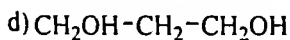
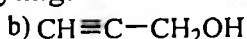
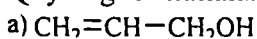
43. Quyidagi birikmalarning nomini ayting:



44. Normal tuzilishga ega bo'lgan $\text{C}_4\text{H}_{10}\text{O}_2$ tarkibli xamma izomer α , β va γ glikollarning struktura formulasini yozing. Ularning xalkaro nomlanishga ko'ra nomini ayting. Qaysi birikma molekularida xiral markaz bor? Ikkita asimmetrik uglerod atomi bo'lgan izomer uchun stereoizomerlarning Fisher formulasini yozing va ularning R, S va D, L - nomlanishga ko'ra nomini ayting.

45. Quyidagi birikmalarning tuzilish formulasini yozing: a) 3,3-dimetilbutanol-1; b) 2-etilgeksandiol-1; d) penten-4-ol-1; e) butin-3-ol-2; f) propantiol-2; g) propantriol-1,2,3. Yuqorida nomi keltirilgan spirtlar orasidan: to'yingan bir atomlik, to'yingan ikki atomlik, to'yingan uch atomlik, to'yinmagan bir atomlik va tiospirtlarni ajrating.

46. Quyidagi birikmalarning nomini ayting:



47. Quyidagi birikmalarning proyeksiya formulalarini keltiring: a) L-butanol-2; b) mezo-butandiol-2,3; d) trans-buten-2-ol-1; e) eritrobutantriol-1,2,3; d) (R) - pentanol-2; e) (R, S) - pentandiol-2,3.

48. Metil spirti molekulasining atom-orbital modelini keltiring. C-O va O-H bog'lar qutblanuvchanligini tushuntiring. O-H bog'ning geterolitik parchalanishidan qanday hosil bo'ladi? Spirtlarning qanday xossasi bu jarayon bilan bog'liq?

49. Qanday bog'ga vodorod bog'i deb aytiladi? Uning energiyasi qanday? Spirtlardagi vodorod bog'i ularning fizik xossalariga qanday ta'sir ko'rsatadi?

50. Metan bilan metil spirti tuzilishini solishtirib, quyidagi savollarga javob bering: 1. Nega metan - gaz, metil spirti - suyuqlik? 2. Nega metan suvda erimaydi, lekin metil spirti suv bilan istalgan miqdorda aralashadi? 3. Nima sababdan bu ikkala modda elektromagnit spektrining yaqin UB - oblastida shaffof?

51. Izopropil spirtining IR - spektrda 3440, 2962, 2930, 2880, 1460, 1380, 1365, 1150, 950 (cm^{-1}) chiziqlari mavjud. Ular qanday gruppalarning tebranishlariga mos keladi?

52. Quyidagi spirtlarni ularning kislotalik xossalari kamayishiga qarab tartibga soling: a) propanol-1; propanol-2; 2-metilpropanol-2; b) etanol, etandiol-1,2, propantriol-1,2,3.

53. Etil spirti bilan etilmerkaptan (etantiol) ning tuzilishini solishtiring. Nima sababdan etil merkaptan etil spirtiga nisbatan past haroratda qaynaydi? Qaysi birida kislotalik xossa yuqori bo'ladi va nega?

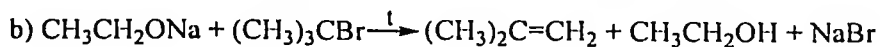
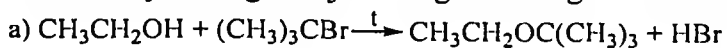
54. To'yingan spirtlarning kimyoviy xossalarini xarakterlang. Ularning galogenalkanlardan asosiy farqi nimada? Etil spirti va etilbromidning bir-biridan keskin farqlanishini kimyoviy misollarda ko'rsating.

55. Propil spirtining quyida keltirilgan reagentlar bilan reaksiyalarini yozing: a) Na; b) KNH_2 ; d) $\text{CH}_3\text{C}\equiv\text{CNa}$; e) CH_3MgI ; f) $\text{HCl}_{(\text{gaz})}$, 0°C . Mahsulotlarning nomini ayting. Qaysi hollarda spirt kislotalik va qaysi hollarda asoslik xossalarini namoyon etishini izohlang.

56. Sanoat miqyosida natriy etilat olish usulini ko'rsatadigan reaksiya tenglamasini yozing. U qanday sharoitda o'tadi? Etil spirt va etoksid - anionning asoslik va nukleofillik xossalarini solishtiring.

57. Natriy etilatning spirtida 1-brombutan bilan qizdirilganda raqobatlashadigan ($\text{S}_{\text{N}}1$ va $\text{S}_{\text{N}}2$) reaksiyalar sodir bo'ladi. Ularning mexanizmini keltiring. Qanday holatda natriy etilat asoslik va qanday holatda nukleofillik xossasiga ega. Mahsulotlarning nomini ayting.

58. Reaksiyalardagi natijalarning har xilligini tushuntiring:



(asosiy maxsulot)

Bu o'zgarishlarning mexanizmini keltiring.

59. Kislotalik katalizator ishtirokida etil spirtining sirka kislota bilan reaksiyasini yozing. Uning mexanizmini kuzating. Nima sababdan katalizatorlik miqdorida olingan mineral kislotalar ishtirokida, spirtlarda nukleofillik xossa paydo bo'lishini tushuntiring.

60. a) propil; b) izopropil; d) uchlamchi-butyl spirtlarining kislota ishtirokida propion kislota bilan reaksiyalari sxemasini keltiring. Qaysi spirtning reaksiya tezligi juda bo'ladi va nega?

61. Etil spirtining sulfat ishtirokidagi molekula ichidagi va molekulalaro bo'ladigan degidratlanish reaksiyalarini yozing. Reaksiya sharoitlari ko'rsating, Hosil bo'lgan birikmalarning nomini ayting. Bu o'zgarishlarning mexanizmini kursating.

62. Butyl spirtlari izomerlarini sulfat kislota ishtirokida degidratlanish tezligining ortishiga qarab bir qatorga joylashtiring. Tushuntirish bering.

63. $C_4H_{10}O$ tarkibli hamma izomer spirtlarning oksidlovchilarga munosabatini solishtiring, Buten-1 va buten-2 uchun $KMnO_4$ ning suvdagi eritmasining qizdirish natijasida oksidlanish reaksiyalarining to'la tenglamalarini yozing. (Ko'rsatma: tenglama tuzilishi mobaynida uglevodorodlarning boshlang'ich va oxirgi mahsulotda okidlanish darajasini aniqlang.

64. Nima sababdan uchlamchi spirtlar neytral va asosli muhitda oksidlovchilar ta'siriga chidamli, lekin kislotalik muxitda osori oksidlanishini tushuntiring. 3-metilpentanol-3 ning sulfat kislota ishtirokida suvda $KMnO_4$, bilan reaksiyasini yozing.

65. Spirtlarning degidrogenlanish (Cu , $200 - 300^\circ C$) reaksiyalarini yozing: a) propanol-1; b) propanol-2; b) 3-metilbutanol-1; d) 3-metilbutanol-2. Bu reaksiyadan birlamchi spirtlarni ikkilamchilaridan farqlashda foydalanish mumkinmi?

66. C_3H_6O tarkibli hamma to'yinmagan spirt izomerlarini yozing va nomini ayting. Ularning qaysi biri yenol hisoblanadi? Ular uchun barqarorroq bo'lgan keton shaklini yozing. Eltikov qoidasini ta'riflang.

67. a) 3-metil-2-buten-1-ol, b) etilenglikol, d) 1,3-butandiol, e) allilkarbinolni sintez qilish uchun qanday galogenli hosilalarni gidrolizlash kerak.

68. a) metil-2-butanol, b) uchlamchi butyl spirt, d) 2-metil-2-pentanol, e) 2,2,4,6-tetrametil-4-oktanol olish uchun qaysi alkenlarni

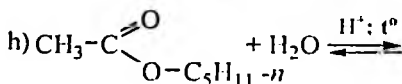
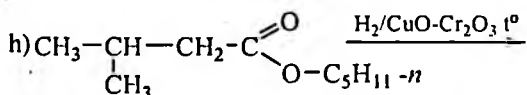
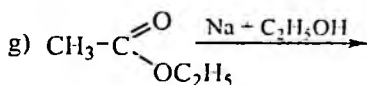
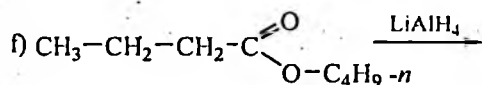
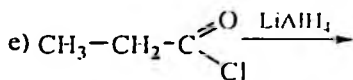
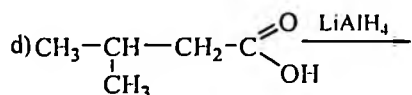
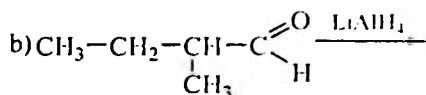
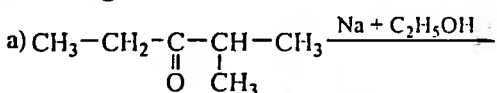
katalitik gidratlash kerak? Alkenlarning sulfat kislotali gidratlanish reaksiyasi mexanizmini tushuntirng.

69. Grinyar reaksiyasidan foydalanib, a) allil spirt, b) 1-penten-3-ol, d) 3-metil-2-butanol, e) 3-metil-5-geksen-3-ol. f) 2-metil-2-butanol, g) 2,3,5-trimetil-3-geksanolni sintez qiling. (Shoymardonov masala va mashq, 79-b, 23-mashq)

28. Gidrobirlash-oksirlash reaksiyasi yordamida a) 4-metil-1-pentanol, b) 3-metil-2-geksanol, d) 4,4-dimetil-1-pentanol sintez qiling.

70. Aldegid va ketonlardan spirtlarni olishda qanday qaytaruvchilar ishlatiladi?

71. Reaksiya tenglamalri reaksiya tenglamalarini oxirigacha yetkazing. Bu reaksiyalar natijasida hosil bo'ladigan spirtlarni nomlang.



72. Propan va boshqa reagentlardan foydalanib, a) n-propilspirt, b) izopropil spirt, d) 1,2-propandiolni sintez qiling. Bu reaksiyalarning borish sharoitlarini ko'rsating. Bu reaksiyalarda hosil bo'ladigan oraliq mahsulotlarni nomlang. (Shoymardonov masala va mashq, 79-b, 27-mashq)

73. Metil spirt va noorganik reagentlardan foydalanib, etil, n-propil va n-butyl spirtni sintez qiling. (Shoymardonov masala va mashq, 79-b, 28-mashq)

74. Magniyorganik birikmalardan foydalanib a) 3-metil-2-butanolni; b) 2-metil-2-butanolni; d) 2,3,5-trimetil-3-geksanolni sintez qiling.

75. Propan va boshqa reagentlardan foydalanib a) n-propil spirtini; b) izopropil spirtini sintez qiling. Bu reaksiyalarning borish sharoitlarini ko'rsating.

76. Etilen qatori uglevodorodi 6,72 l (n.sh.) vodorod xloridni biriktira oladi. Reaksiya mahsuloti natriy gidroksidning suvli eritmasi bilan qizdirib gidroliz qilinsa 22,2 g uchta metil guruhi saqlagan bir atomli to'yingan spirt hosil bo'ladi. Dastlabki uglevodorodning va hosil bo'lgan spirtni aniqlang.

77. Propanol-1 dan propanol-2, valerian aldegidan pentanol-3 ni qanday olish mumkin?

78. To'yingan bir atomli spirtning degidratlanib, vodorod bromid bilan reaksiyaga kirishganda 65,4 g bromid 75% unum bilan hosil bo'lgan. Spirtning shunday miqdori natriy bilan reaksiyaga kirishganda 8,96 l (n.sh.) gaz ajralgan. Olingan spirtni toping.

79. a) 2-metil-2-pentanol; b) uchlamchi butil spirt; d) 3-metil-2-pentanol; e) 2,2,4,6-tetrametil-4-oktanol olish uchun qaysi alkenlarni katalitik gidratlash kerak?

80. 11,2 g alkenga kaliy permanganatning suvdagi eritmasidan ortiqcha ta'sir ettirib, 18 g simmetrik tuzilgan ikki atomli spirt olindi. Dastlabki alkenning tuzilishini aniqlang.

81. C_4H_8 tarkibli uglevodorodlardan qaysi spirtlarni olish mumkin?

82. 180 g 5% li kaliy permanganat eritmasi orqali permanganatning massa ulushi hosil bo'lgan organik moddaning massa ulushiga tenglashguncha propen o'tkazildi. Hosil bo'lgan organik modda bilan reaksiyaga kirisha oladigan sirka kislotaning maksimal massasini toping.

83. Nima uchun spirtlar uglevodorodlardan farq qilib suvda eriydi?

84. Brensted-Lourining "kislota" va "asos" tushunchasi Lyuis tushunchasidan qanday farq qiladi? Bu ta'riflarning o'xshashligi nimada? Javobingizni aniq misollar bilan asoslang.

85. Nega BF_3 , $ZnCl_2$, $AlCl_3$, $SnCl_4$, $FeCl_3$ Lyuis kislotalari deb yuritiladi?

86. a) metal spirt, b) etil spirt, d) 2-propanol, e) 2-metil-2-propanolni nisbiy kislotaliligining ortib borishi tartibida joylashtiring. Javobingizni electron nazariyasi bilan asoslang.

87. Spirtlarning kislotali xossalari namoyon bo'ladigan reaksiyalarga misollar keltiring.

88. Qaysi reaksiyalarda spirtlarning asos xossalari namoyon bo'ladi?

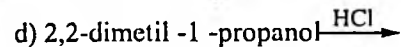
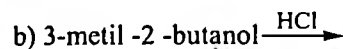
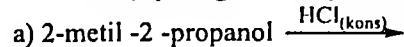
89. a) 2-metil-2-butanol, b) 1-pentanol, d) 2-pentanolni asos xossalari kuchayib borishi tartibida joylashtiring.

90. H-Hal, H-O, H-N, H-C kislotalar kuchini taqqoslang (kislota kuchining oshib borishi tartibida joylashtiring).

91. Spirtlar bilan galogenid kislotalar orasida boradigan reaksiyalarda a) galogenid kislotalar (HCl, HBr, HI) ning; b) metil spirt, birlamchi, ikkilamchi uchlamchi va allil spirtlarning reaksiyaga kirishish qobiliyatini taqqoslang.

92. Galogenid kislotalar bilan qaysi spirtlar S_N1 va S_N2 mexanizm bo'yicha reaksiyaga kirishadi? S_N1 va S_N2 reaksiyalar mexanizmini keltiring.

93. Quyidagi reaksiyalar tenglamalarini oxiriga etkazib yozing:

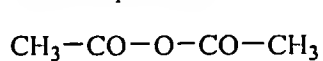


94. Etil spirt bilan quyidagi birikmalar orasida boradigan reaksiyalar tenglamalarini yozing:

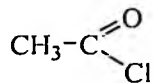
a) P va I_2 ; b) PCl_5 ; d) PBr_3 ; e) $SOCl_2$; f) Na; g) CH_3MgI ;

h) $Zn(CH_3)_2$; i) HCl; j) $0^\circ C$; k) $CH_3-C\equiv C-Na$

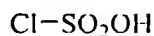
95. Etil spirt bilan



a) sirka angidirid



b) asetil xlorid



d) xlorosulfon kislota

e) konsentrlangan sulfat va sirka kislota aralashmasi (qizdirilganda):

f) konsentrlangan sulfat kislota har xil haroratda; g) nitrat va sulfat kislota aralashmasi reaksiyaga kirishganda qanday moddalar hosil bo'ladi?

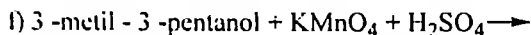
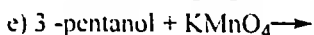
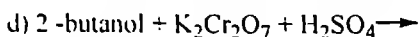
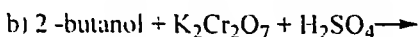
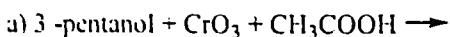
96. a) 3-metil-3-geksanol, b) 4-metil-2-pentanol, d) 2-metil-2-butanol, e) 3,4-dimetil-3-geksanolni kislotalar katalizatorligida degidratlanganda asosiy mahsulotlar sifatida qanday to'yinmagan birikmalar hosil bo'ladi?

97. Propargil spirt va a) chumoli aldegid, b) kumush oksidning ammiakdagi eritmasi, d) mis oksidning ammiakdagi eritmasi, e) PCl_5 orasida boradigan reaksiyalar tenglamalarini yozing.

98. Gleserin va a) KHSO_4 (t°); b) HNO_3 va H_2SO_4 aralashmasi; d) CH_3COOH (H_2SO_4 ishtirokida); $\text{C}_{17}\text{H}_{35}\text{COOH}$ (H^+ , 200°C); e) Na orasida boradigan reaksiyalar tenglamalarini yozing.

Bu reaksiyalarda hosil bo'ladigan moddalarni nomlang.

99.

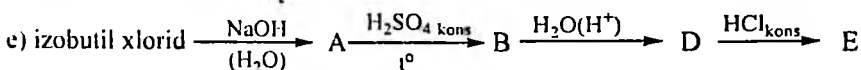
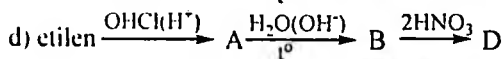
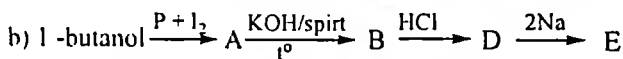
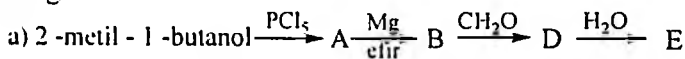


oksiidlanish qaytarilish reaksiyalari tenglamalarini oxirigacha yozing va koeffisientlarini tenglashtiring.

100. a) 1-propanol, b) izobutil spirt, d) 2-propanolni $100-180^\circ\text{C}$ da mis ishtirokida degirogenlanganda qanday birikmalar hosil bo'ladi?

101. Etilenglikolni (uglerod atomlari orasidagi bog'ni uzmasdan) oksidlaganda qanday moddalar hosil bo'ladi?

102. Quyidagi aylanishlar natijasida hosil bo'ladigan moddalarni yozing:



Bu reaksiyalarda hosil bo'ladigan oraliq va oxirgi mahsulotlarni nomlang.

103. Degidrogalojenlaganda aldegid, degidratlanganda 2-metil-1-buten, etilmagniybromid bilan reaksiyaga kirishganda esa etan hosil qiladigan $\text{C}_5\text{H}_{12}\text{O}$ tarkibli spirtning tuzilish formulasini aniqlang.

104. Molekulyar massasi 62 ga teng bo'lgan spirt metilmagniy yodid bilan reaksiyaga kirishganida 1,33 ml (n.sh) gaz ajralib chiqadi. Spirt molekulasida nechta faol molekula borligini va uning tuzilishini aniqlang.

105. C_2H_6O tarkibli moddaning PMR spektrida quyidagi signallar bor: δ 1,2 m.h. (triplet, 3H); δ 3,6 m.h. (kvadruplet, 2H); δ 4.0 m.h. (singlet, 1H). Modda tuzilishini aniqlang.

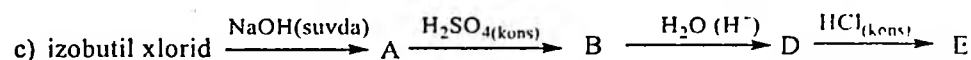
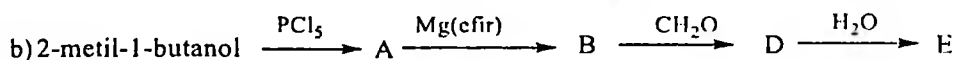
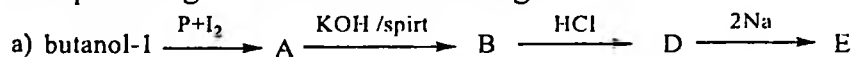
106. Izopropil spirtning IK- spektrida 3440, 2962, 2930, 2880, 1460, 1380, 1365, 1150 va 950 cm^{-1} sohalarda yutilish bor. Bular qaysi atomlar guruhlarning tebranishlariga tegishli?

107. Oksidlanganda aldegid hosil qila oladigan spirtlarning umumiy formulasini yozing.

108. Etanolning vodorod bromid bilan reaksiyasi tenglamasini yozing. Bu reaksiya qanday sharoitda boradi?

109. 18,4 g etanoldan 6,0 g oddiy efir olindi. Degidratlanish mahsulotining unumini toping.

110. Quyidagi kimyoviy o'zgarishlar natijasida hosil bo'ladigan oraliq va oxirgi mahsulotlarni nomlang:



111. 25 g 100% li etanol namunasi katalizator to'ldirilgan 300°C haroratgacha isitilgan nay orqali o'tkazildi. Suv bug'lari ajratib olingandan keyin qolgan mahsulotlar hajmi 107°C va 101 kPa bosimda 9,38 l ni tashkil etdi. Suv-sizlantirilgan mahsulotlar aralashmasining o'rtacha molyar massasi 58,67 g/molga teng. Etanolning degidratlanishi ikki yo'nalishda borishini isobga olib, reaksiya mahsulotlarining har birini unumini toping.

112. Etanol yaqingacha tarkibida kraxmal tutgan mahsulotlarni biyg'itish usuli bilan olinar edi. Bu jarayonda qanday biokimyoviy reaksiyalar amalga oshadi?

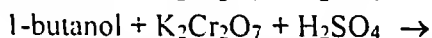
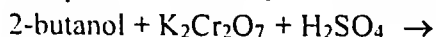
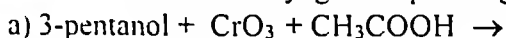
113. 8 MPa bosim va 227°C da yopiq reaktorda etanol sintez qilish uchun etilen va suv bug'lari 3:1 nisbatda aralashtirildi. Reaksiya tugagach o'sha sharoitda bosim 5% ga kamaydi. Reaksiyon aralashmadagi etanol bug'larining hajmiy ulushini va etilenning etanolga aylanish unumini toping.

114. 5,6 g natriy metali 112,5 ml (zichligi 0,8 g/ml) 96% li etil spirtiga ta'sir ettirildi. Reaksiya tugagandan keyin hosil bo'lgan eritmadagi moddalarning massa ulushlarini toping.

115. 15.2 g ikkita alkanol aralashmasini 100%li unum bilan degidrogenlash uchun 24 g mis (II)-oksidi sarflandi. Hosil bo'lgan aralashmaga kumush oksidining ammiakdagi eritmasidan ortiqcha ta'sir ettirib, 86.4 g cho'kma olindi. Spirtlarning tuzilishini va ularning dastlabki aralashmadagi miqdorini aniqlang.

116. 23 g etanol konsentrlangan sulfat kislota qo'shib qizdirilganda ikki xil organik modda hosil bo'ldi. Ulardan biri gaz modda bo'lib, 40 g 40% li bromning uglerod (IV)-xlorididagi eritmasini rangsizlantiradi. Ikkinchi modda oson qaynaydigan suyuqlik bo'lsa, qaysi moddalar va qanday miqdorda hosil bo'lgan?

117. Etanol reaksiyaga to'liq kirishgan.



Reaksiya tenglamalarini oxirigacha yozing va koeffitsientlarini tenglashtiring.

118. Hajmlari teng etilenglikol (zichligi 1,1 g/ml), etanol (zichligi 0,8 g/ml) va propion kislota (zichligi 0,99 g/ml) aralastirildi. Shunday aralashmaning 10 grammi bilan reaksiyaga kirishadigan natriyning maksimal miqdorini aniqlang.

119. 10,6 g ko'p atomli spirtga 10 g natriy xloridning ortiqcha kons. H_2SO_4 bilan reaksiyasidan hosil bo'lgan xlorovodorod ta'sir ettirganda monoxlorli birikma hosil bo'ladi. Olinadigan gazlar aralashmasining zichligi oltingugurt oksidining zichligiga teng bo'lishi uchun monoxlorli hosilaning 1 l bug'iga etanol bug'idan qancha hajm qo'shish kerak?

120. 10,6 g ko'p atomli spirtga 10 g natriy xloridning ortiqcha kons. H_2SO_4 bilan reaksiyasidan hosil bo'lgan xlorovodorod ta'sir ettirganda monoxlorli birikma hosil bo'ladi. Olinadigan gazlar aralashmasining zichligi oltingugurt oksidining zichligiga teng bo'lishi uchun monoxlorli hosilaning 1 l bug'iga etanol bug'idan qancha hajm qo'shish kerak?

121. $(\text{CH}_3)_2\text{COH}-\text{CH}_2\text{OH}$ tuzilishli glikolning kuchli kislota bilan qizdirganda boradigan reaksiya tenglamasini yozing.

122. 10,6 g ko'p atomli spirtga 10 g natriy xloridga mo'l miqdordagi sulfat kislota ta'sir ettirilganda ajraladigan vodorod xlorid

ta'sir ettirilganda monoxlorli hosila olindi. I I shu monoxlorli hosilaga etanol bug'ining qanday hajmi qo'shilganda hosil bo'ladigan gazlar aralashmasining zichligi o'sha sharoitda oltingugurt(IV)oksid-zichligiga teng bo'ladi?

123. Glitserin va a) KHSO_4 (Δt°); b) CH_3COOH (H_2SO_4 ishtirokida); d) $\text{C}_{17}\text{H}_{35}\text{COOH}$ (H^+ ; 200°C); e) Na orasida boradigan reaksiyalar tenglamalarini yozing va hosil bo'ladigan moddalarni nomlang.

124. To'rtta uglerod atomi saqlagan uch atomli spirtlar izomerlarining aralashmasi sirka kislota bilan eterifikatsiya reaksiyasiga 1:1 nisbatda kirishadi. Bu reaksiyada hosil bo'ladigan barcha izomer mahsulotlarning formulalarini yozing.

125. 15,4 g glitserin va etilenglikol aralashmasi yondirilganda hosil bo'lgan gaz 1200 g suvga 50 g kalsiy karbonat qo'shib tayyorlangan suspenziya orqali o'tkazildi tiniq eritma hosil bo'ldi. Shunday miqdordagi aralashmaga natriy metali ta'sir ettirilganda ajraladigan gazning 20°C va 103 kPa bosimda egallaydigan hajmini toping.

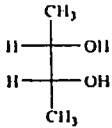
126. Etilenglikol (zichligi 1,1 g/ml) va etanol (zichligi 0,8 g/ml) va propion kislotaning (zichligi 0,99 g/ml) teng hajmlari aralashtirildi. 10 g shunday aralashma bilan natriy metalining qanday maksimal miqdori reaksiyaga kirisha oladi?

127. $\text{C}_2\text{H}_6\text{O}$ tarkibli moddaning PMR spektrida quyidagi signallar bor: δ 1,18 m.h. (triplet, 3H); δ 3,65 m.h. (kvadruplet, 2H); δ 5,40 m.h. (singlet, 1H). Modda tuzilishini aniqlang.

128. $\text{C}_2\text{H}_6\text{O}_2$ tarkibli birikmaning PMR-spektrida quyidagi signallar bor: δ 3,7 m.h. (singlet, 4H) va δ 4,7 m.h. (singlet, 2H). Birikmaning tuzilishini aniqlang.

129. a) etil spirt, b) n-butil spirt, d) allil spirtning tuzilish formulalarini yozing va ularning YaMR spektrlarida nechta signal bo'lishi kerakligini ayting.

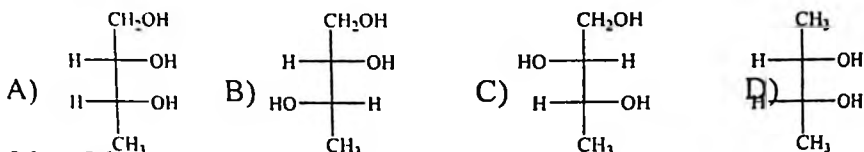
Uglevodorodlar gidroksilli hosilalarining nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. 2,3-butandiolning  tuzilishli mezo-formasi xiral markazlari konfiguratsiyasini to'rtta (A, B, C va D) talaba to'rt xil aniqladi. Talabalarning qaysi biri har ikkala xiral markazning konfiguratsiyasini to'g'ri aniqlagan?

- A) 2R, 3S B) 2S, 3R C) 2R, 3R D) 2S, 3S

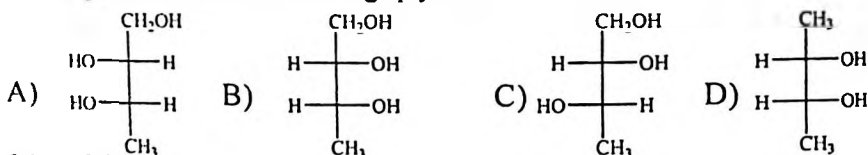
20, c. 31.

2. Proyeksiyon formulalarning qaysi biri eritro-1,2,3-butantriolniki?



26, c. 26.

3. Proyeksiyon formulalarning qaysi biri treo-1,2,3-butantriolniki?



26, c. 26.

4. Quyidagi stereoizomerlarning qaysilari bir-biri bilan enantiomer. qaysilari esa bir-biriga diastereomer?

I (2R,3R)-2,3-butandiol;

II (2S, 3S)-2,3-butandiol;

III (2S, 3R)-2,3-butandiol

A) bir-biri bilan enantiomer va diastereomer bo'lgani yo'q

B) I va III bir-biriga enantiomer, I va II esa diastereomer;

C) II va III bir-biriga enantiomer, I va II esa diastereomer;

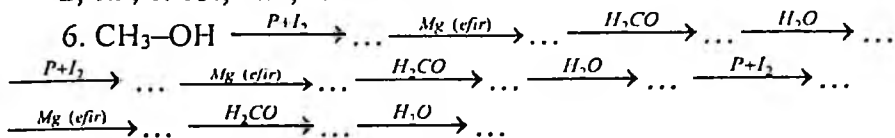
D) I va II bir-biriga enantiomer, I va III, shuningdek, II va III esa diastereomer;

5. Hidroborlash-oksidlash reaksiyasi bilan 4-metil-1-pentanolni alkenlarning qaysi biridan sintezlash mumkin?

A) 2-metil-1-pentendan B) 3-metil-1-pentendan

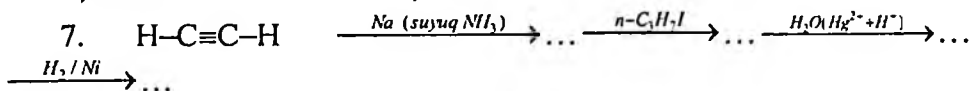
C) 4-metil-1-pentendan D) 4-metil-2-pentendan

2, τ.2, c. 13.; 15, c. 489-490.



Reaksiyalar oxirgi mahsulotini nomlang:

- A) propanol-1 B) propanol-2
 C) butanol-2 D) butanol-1



Reaksiyalar oxirgi mahsulotini nomlang:

- A) 1-pentanol B) 1-butanol C) 2-pentanol D) 3-pentanol

8. Metanol sanoat miqyosida qanday olinadi?

- A) $\text{CH}_3\text{-Cl} \xrightarrow{\text{NaOH+H}_2\text{O (t}^\circ)}$
 B) $\text{CH}_3\text{-Br} \xrightarrow{\text{NaOH+H}_2\text{O (t}^\circ)}$
 C) $\text{CO} + 2\text{H}_2 \xrightarrow{\text{ZnO} + \text{ZnCr}_2\text{O}_4 (250\text{-}350^\circ\text{C, } 5\text{-}30 \text{ MPa})}$
 D) $\text{HCHO} + \text{H}_2 \xrightarrow{\text{Ni}}$

2, τ.2, c. 44.; 4, 192-b.

9. Tarkibida to'rttadan yigirmatagacha uglerod (C₄-C₂₀) saqlagan normal tuzilishli spirtlar sanoatda qaysi bir metallorganik birikmalarni oksidlash usuli bilan olinadi?

- A) magniyorganik B) ruxorganik
 C) alyuminiyorganik D) natriyorganik

3, c. 284.

10. Keltirilgan reaksiyalarning qaysi birida spirtlarning asos xossalari namoyon bo'ladi?

- A) $\text{R-OH} + \text{Na} \rightarrow \text{R-ONa} + \frac{1}{2}\text{H}_2$
 B) $\text{R-OH} + \text{R}^1\text{MgX} \rightarrow \text{R}^1\text{H} + \text{ROMgX}$
 C) $\text{R-OH} + \text{HBr} \rightarrow \text{R-O}^+\text{H}_2 + \text{Br}^-$
 D) $\text{R-OH} + \text{HC}\equiv\text{CNa} \rightarrow \text{RONa}^+ + \text{C}_2\text{H}_2$

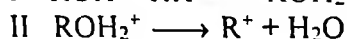
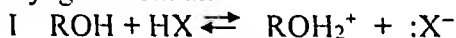
4, 183-b.

11. Spirtlardan qaysi biri galogenid kislotalar bilan reaksiyaga nisbatan oson kirishadi?

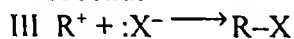
- A) birlamchi spirtlar B) ikkilamchi spirtlar
 C) uchlamchi spirtlar D) allil spirt

4, 185-186-b.; 15, c. 506.

12. Metanol va ko'pchilik birlamchi spirtlardan boshqa barcha spirtlar vodorod galogenidlar (HX) bilan quyidagi sxema bo'yicha reaksiyaga kirishadi:



substrat



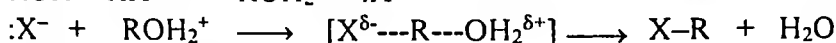
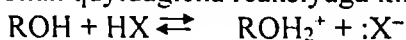
reagent

Reaksiya mexanizmini aniqlang.

A) $\text{S}_{\text{N}2}$ B) $\text{S}_{\text{N}1}$ C) S_{E} D) S_{R}

4, 185-187-b.; 15, c. 506

13. Ko'pchilik birlamchi spirtlar va metanol vodorod galogenidlar (HX) bilan quyidagicha reaksiyaga kirishadi:



reagent substrat

Reaksiya mexanizmini aniqlang?

A) S_{E} B) S_{R} C) $\text{S}_{\text{N}1}$ D) $\text{S}_{\text{N}2}$

4, 185-187-b.; 15, c. 506

14. Etil spirtga kons. H_2SO_4 ta'sir ettirilganda reaksiya sharoiti (harorati)ga qarab har xil mahsulotlar hosil bo'ladi? Reaksiya 150°C dan yuqori haroratda o'tkazilganda qanday birikma hosil bo'ladi?

A) dietil efir (C_2H_5)₂O

B) etilen

C) etilsulfat kislota $\text{C}_2\text{H}_5\text{SO}_3\text{H}$

D) dietilsulfat (C_2H_5)₂ SO_4

4, 188-b.

15. Keltirilgan spirtlardan qaysi biri HBr bilan $\text{S}_{\text{N}1}$ - mexanizmda reaksiyaga kirishadi.

A) metanol

B) 1-propanol

C) 2-propanol

D) etanol

4, 188-189-b.

16. Spirtlardan qaysi biri HI bilan $\text{S}_{\text{N}2}$ - mexanizm bo'yicha reaksiyaga kirishadi?

A) 1-butanol

B) 2-butanol

C) 2-metil-1-propanol

D) 2-metil-2-propanol

18, 158-159-b.

17. Keltirilgan spirtlardan qaysi birining kislotaligi nisbatan kuchli?

- A) 1-propanol
 B) 2-propanol
 C) metiletilefir $\text{CH}_3\text{-O-C}_2\text{H}_5$
 D) dimetilefir

24. Spirtlar UB-spektrida yutilish maksimumi qaysi sohada yotadi?

- A) 210-220 nm B) 230-240 nm C) 150-200 nm D) 250-270 nm

8, c. 149

25. R-CH=CH-OH tipidagi to'yinmagan spirtlarda gidroksil guruhining protoni qaysi maydonda signal beradi?

- A) δ 15.0-18.0 m.h. B) δ 12-14 m.h. C) δ 9-11 m.h. D) δ 6-8 m.h.

17, c. 79

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	B	11	D	21	A
2	A	12	B	22	B
3	C	13	D	23	B
4	D	14	B	24	C
5	C	15	C	25	A
6	D	16	A		
7	C	17	D		
8	C	18	D		
9	C	19	D		
10	D	20	B		

VII BOB. TIOLLAR VA ODDIY EFIRLAR

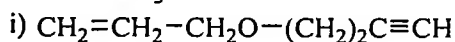
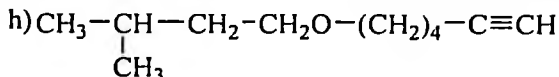
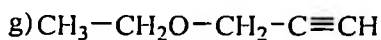
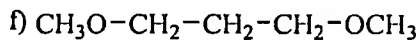
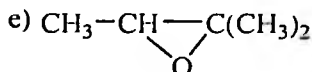
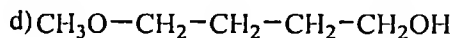
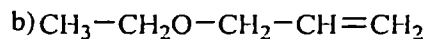
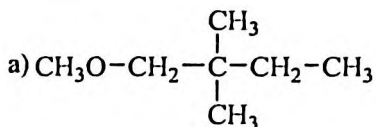
Tiollar va oddiy efirlarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari oid masala va mashqlar

1. Nega oddiy efirlar molekulyar massasi teng bo'lgan tegishli spirtlarga nisbatan past haroratda (masalan, dietil efir 34,6°C da, butil spirt esa 188°C da) qaynaydi?

2. Dimetil efir molekulasini tuzilishi va C-O bog'ning reaksiyaga kirishish qobiliyatini tushuntiring. Bu modda kislotali va asosli xossalarni namoyon qila oladimi?

3. a) di-β-xloretil efir; b) 3-metoksigeksan; d) 1-metoksibutan; e) 1,2-dimetoksietan; f) 4-metoksi-1-buten; g) 5-izopropoksi-1-pentinning tuzilish formulalarini yozing.

4.

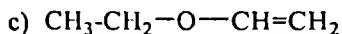
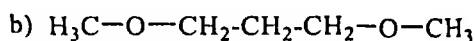
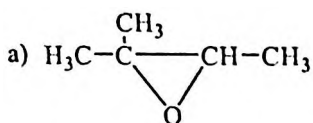


birikmalarni sistematik nomenklaturaga binoan nomlang. Birikmalarni sistematik nomenklaturaga binoan nomlang:

5. $\text{C}_5\text{H}_{12}\text{O}$ tarkibli izomer oddiy efirlarning tuzilish formulalarini yozing. Ularni ratsional va sistematik nomenklaturaga binoan nomlang. Oddiy efirlarda izomeriyaning qanday turlari uchraydi?

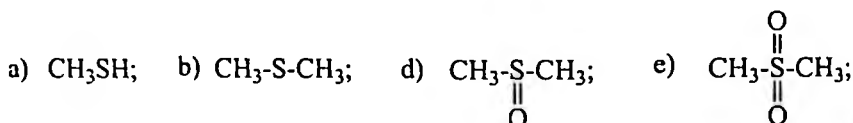
6. $\text{C}_8\text{H}_{18}\text{O}$ tarkibli simmetrik oddiy efirlarning tuzilish formulalarini yozing va ularni ratsional nomenklaturaga binoan nomlang.

7.



8. $\text{C}_5\text{H}_{12}\text{O}$ modda mo'l konsentrlangan HI bilan qizdirilganda CH_3I va $(\text{CH}_3)_2\text{CHCH}_2\text{I}$ aralashmasi hosil bo'ladi. $\text{C}_5\text{H}_{12}\text{O}$ moddaning tuzilishini aniqlang.

9.

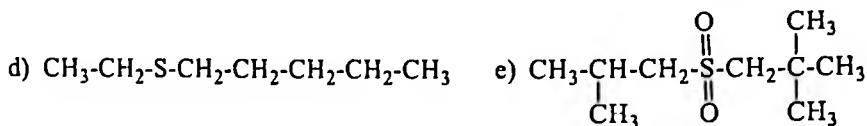
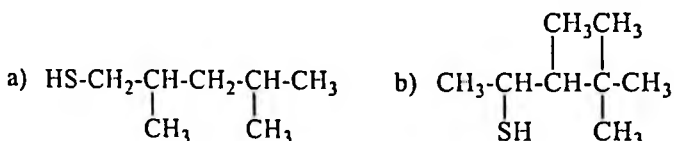


molekulalarning elektron formulalarini yozing.

10. a) $\text{C}_2\text{H}_5\text{OH}$ va $\text{C}_2\text{H}_5\text{SH}$ ning kislotali xossalari: b) $\text{C}_2\text{H}_5-\text{O}-\text{C}_2\text{H}_5$ va $\text{C}_2\text{H}_5-\text{S}-\text{C}_2\text{H}_5$ ning asosli va nukleofil xossalari taqqoslang.

11. a) 2-pentantiol; b) neopentilmerkaptan; d) β, β' - dioxlordietilsulfid; e) 2-butansulfokislota; f) 1-butansulfoxlorid; g) diuchlamchibutil sulfid; h) etiltiobutan; i) izopropilizobutil sulfid; j) dietil sulfoksid; k) trimetil sulfoniy yodid; l) dipropilsulfon; m) merkaptetanolning tuzilish formulalarini yozing.

12.



birikmalarni nomlang.

13. a) $\text{C}_4\text{H}_{10}\text{S}$ b) $\text{C}_5\text{H}_{12}\text{S}$ tarkibli izomer tiospirtlarning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang.

14. $C_4H_{10}O$ tarkibli oddiy efirlarning tuzilish formulalarini yozing. Simmetrik va nosimmetrik efirlarni belgilang. Bu efirlarni kislorod atomiga birikkan radikallarga ko'ra nomini ayting.

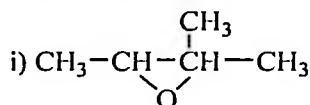
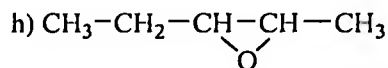
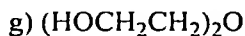
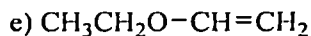
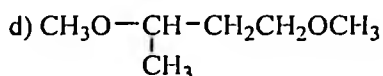
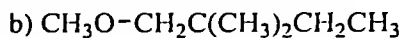
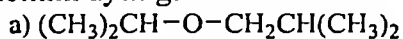
15. Quyidagi birikmalarning tuzilish formulasini keltiring:

a) 1- metoksibutan; b) 2- etoksi-2- metilpropan; d) 1- propoksi-3- metiloutan; e) 1,2- dimetoksietan; f) 3- metoksipropen-1; g) 3- etoksipropin-1; h) 4- metoksibutanol-1. Imkoniyat bo'lgan joylarda efirlarning radikallar bo'yicha nomini ayting.

16. Birikmalarning tuzilish formulasini yozing:

a) 1,2- epoksipentan; b) 1,2- epoksibutan; d) (Z) -- 2,3- epoksibutan; e) (E)- 2,3- epoksipentan.

17. Birikmalarning sistematik va rotsional nomenclaturaga binoan nomini ayting:



18. $C_4H_{10}S$ tarkibli hamma tioefirlarning tuzilish formulalarini keltiring. Ularning oltingugurt atomiga bog'langan uglevodород radikallari bo'yicha nomini ayting.

19. Tarkibida bittadan asimmetrik uglerod atomi bo'ladigan $C_5H_{12}O$ va $C_5H_{12}S$ tarkibli efirlarning struktura formulalarini yozing. Enantiomerlarning proyeksiya formulalarini tasvirlang. Ularni D, L va R, S sistemasi bo'yicha nomini ayting.

20. Dimetil efir molekulasini tuzilishini izohlang. Bu birikma kislotalik, asoslik yoki nukleofilik xossaga ega bo'la oladimi?

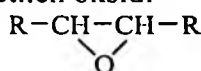
21. Dietil efirning quyidagi xossalarini izohlang: a) etanolga nisbatan juda past haroratda qaynaydi (efir $35^\circ C$ da va etanol $78^\circ C$ da qaynaydi); b) suvda juda oz miqdorda eriydi (100 g suvda 6,95 g); d) kislota muhitli suvda eruvchanligi ortadi; e) kovalent bog'lanishli organik moddalar uchun erituvchi hisoblanadi; f) UB spektroskopiyada erituvchi sifatida ishlatiladi.

22. Quyidagi savollarga javob bering: a) nima sababdan dietilsulfidning qaynash harorati, dietilefirnikidan yuqori (92 va 35°C); b) nima sababdan dietilsulfidning qaynash harorati, enantiolnikidan yuqori (92 va 37°C); d) nega dietilsulfid suvda deyarli erimaydi; g) nima sababdan dietilsulfid kuchli kislotada eriydi?

23. Dietilefir va dietilsulfidning asoslik va nukleofillik xossalarini solishtiring. Hosil bo'lgan farqni tushuntiring.

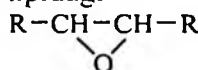
24. Dietilefir va etilen oksidining tuzilishini solishtiring. Savollarga javob bering: a) qaysi birikmada C-O bog' mustahkamroq va nega? b) qaysi birikmaning barqarorligi pastrok bo'lib, aktivligi kattaroq;

d) 1,2- dialmashigan etilen oksidi



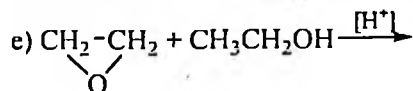
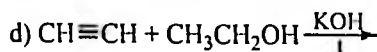
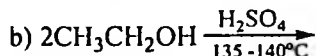
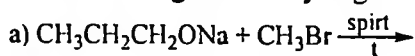
ikki stereoizomer ko'rinishida uchraydi (qanday);

g) nima uchun epoksid tipidagi



CH₂ gruppasi protonlari bir-biriga ekvivalent emas (PMR-spektrda ikkita signal beradi)?

25. Quyidagi reaksiyalarning asosiy mahuloti hisoblanga birikmalarning nomini ayting:



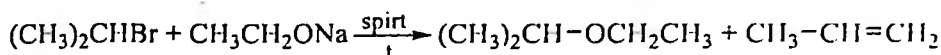
26. a) dipropil; b) etilpropil efirlarni olish mumkin bo'lgan reaksiyalarni yozing.

27. Propilen, metil spirt va anorganik birikmalar yordamida quyidagi efirlarni olish reaksiyalarini yozing:

a) diizopropil; b) metilizopropil; d) metilallil; e) 1,2-dimetoksiopropan; d) metilpropilsulfid.

28. Quyidagi faktlarni izohlang: a) sulfat kislotasi ishtirokida etil va propil spirtining aralashmasi qizdirilganda uch xil efir aralashmasi olinadi (qanday?); b) xuddi shu sharoitda uchlamchi-butil spirt va etanol aralashmasidan asosan bitta efir hosil bo'ladi (qanday?).

29. Vilyamson reaksiyasi bilan etilizopropilefir olish mobaynida qo'shimcha mahsulot sifatida propilen hosil bo'lishini izohlang:



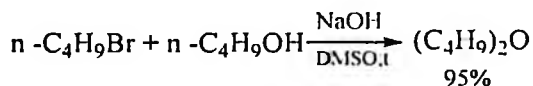
Vilyamson reaksiyasiga binoan, quyidagi nosimmetrik efirlarni sintez qilishning eng qulay yo'lini taklif qiling:

a) metilizopropil efir; b) etil - uchlamchi-butilefir.

30. Nima sababdan izopropil-uchlamchi-butilefirni:

a) Vilyamson reaksiyasi usulida olib bo'lmaydi; b) tegishli spirtlar sulfat kislotada ishtirokida degidratlanishidan deyarli hosil bo'lmaydi; v) izobutilen va izopropil spirtning sulfat kislotada ishtirokida o'zaro reaksiyasidan hosil qilish mumkinmi?

31. Quyidagi reaksiya natijasida katta unum bilan butil efir hosil bo'ladi:

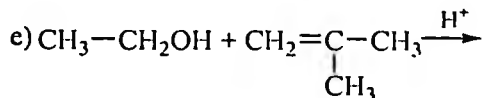
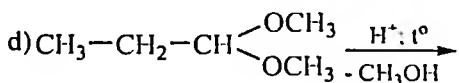
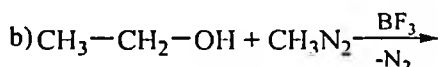
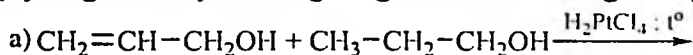


Bu o'zgarishlar mexanizmini taklif eting.

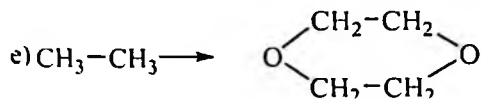
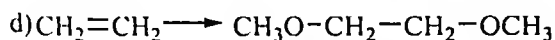
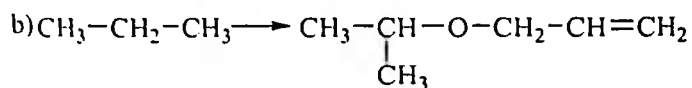
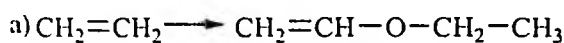
32. Uilyamson sintezidan foydalanib, a) dietil efir; b) etilizobutil efir; d) metiluchlamchibutil efir; e) diizopropil efirning olinish reaksiyalari sxemalarini yozing.

33. a) dibutil; b) etiluchlamchibutil; d) diizopropil; e) diuchlamchibutil oddiy efirlarini olish uchun qaysi spirtlarni konsentrlangan H_2SO_4 bilan qizdirsh kerak? Ularni olinish reaksiyalari sxemalarini yozing. a-, b- va e-reaksiyalarning mexanizmini keltiring.

34. Quyidagi reaksiyalarning tenglamalarini oxirigacha yetkazing:



35.



O'zgarishlarni amalga oshiring. Bu reaksiyalarning borish sharoitini ko'rsating. Bu reaksiyalarda hosil bo'ladigan oraliq va oxirgi mahsulotlarni nomlang.

36. Uch xil usul bilan dietil efir oling. Bu efir sanoatda qanday olinadi?

37. Agar oddiy efirlarni spirtlarning degidratlanish mahsulotlari deb qarasaq, etilenglikoldan qanday oddiy efirlar hosil bo'lishi mumkin?

38. Etilenoksid sanoat miqyosida qanday usullar bilan olinadi?

39. 25 g metanolning degidratlanishi 80%li unum bilan borganda hosil bo'ladigan oddiy efirning massasini hisoblang.

40. 18.4 g etanoldan 6,0 g oddiy efir olindi. Degidratlash reaksiyasida mahsulotning unumini hisoblang.

41. a) etan va boshqa reagentlardan 1,4-dioksanni; b) etilen va boshqa reagentlardan – 1,2-dimetoksietanni sintez qiling.

42. Quyidagi kimyoviy aylanishlarni amalga oshiring:

a) etilen \longrightarrow divinil efir; b) propen \longrightarrow izopropilallil efir.

43. Degidratlanish 80% unum bilan amalga oshsa 25 g metanoldan olinadigan efirning massasini ko'rsating.

44. 40 ml metanoldan (zichligi 0,8 g/ml) 100% unum bilan hosil bo'lgan efir 25 °C va 100 kPa bosimda qanday hajmni egallaydi?

45. Noma'lum tuzilishga ega bo'lgan ikki bir atomli spirtlar molekulararo degidratlanganda 10,8 g suv va 36 g miqdorlari teng bo'lgan organik moddalarning bir sinfiga tegishli uch xil organik moddaning 36 g aralashmasi hosil bo'ldi (unum 100%). Boshlang'ich spirtlarning tuzilishini aniqlang.

46. 30 g noma'lum tarkibli alkanolning molekulararo degidratlanishidan 3,6 g (nazariy unumga nisbatan 80%) suv ajraldi.

Molekulasida ikkita metil guruhi borligini inobatga olib, dastlabki alkanolning tuzilishini aniqlang.

47. Ikkita noma'lum tuzilishli bir atomli spirt aralashmasini molekulararo degidratlaganda 10,8 g suv ajraldi va organik birikmalarning bitta sinfiga mansub uchta organik birikmaning teng molyar miqdordagi 36 g aralashmasi hosil bo'ldi (unum 100%). Dastlabki spirtlarning tuzilishini aniqlang.

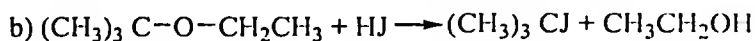
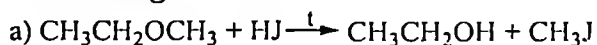
48. To'yingan oddiy efirlarning umumiy kimyoviy xossalarini xarakterlang. Bu sinf birikmalarining spirtlardan asosiy farqi nimada? Dietilefir va etanolning quyidagi reagentlarga munosabatini solishtiring:

a) Na(20°C); b) CH₃MgJ; d) HBr(0°C); e) KMnO₄(H₂O.t).

O'zaro ta'sirlashadigan hollar uchun reaksiya tenglamalarini yozing. Hosil bo'ladigan birikmalarning nomini ayting.

49. Yodid kislota ta'sirida dietilefirning parchalanish sxemasini keltiring. O'zaro ta'sirlanish mexanizmini ta'riflang. Nima uchun bu reaksi xlorid kislota ishtirokida bormay, bromid kislota ta'sirida qiyin o'tishini tushuntiring.

50. Nosimmetrik efirlarning yodid kislota ta'sirida parchalanish yo'nalishini tushuntiring:



51. D-metil-ikkilamchi-butil efirning quruq NVr bilan parchalanishidan metil bromid va D-butanol-2 hosil bo'ladi. Xiral markazi konfiguratsiyasining saqlanishini tushuntiring.

52. Dietilsulfidning quyidagi reagentlar bilan reaksiyalarini yozing:

a) HBr_(kons.), 20°C;

b) CH₃J, t;

d) H₂O₂(CH₃COOH, 20°C);

e) H₂O₂(CH₃COOH, qaynatish).

Dietilsulfidning xossalarini dietilefir xossasi bilan solishtiring.

53. Quyidagi juft birikmalarni qanday oddiy reaksiyalar yordamida farqlash mumkin: a) dietilefir va butanol-2; b) dietilefir va etilbromid; d) viniletilefir va dietilefir?

54. Etilen oksidining (1 mol) quyidagi reagentlar bilan reaksiyalarini yozing:

a) H₂O[H⁺]; b) HBr; d) CH₃MgJ; e) H₂O[OH⁻]; f) HCN;

f) CH₃CH₂OH [H⁺]; g) CH₃COOH; h) NH₃↑;

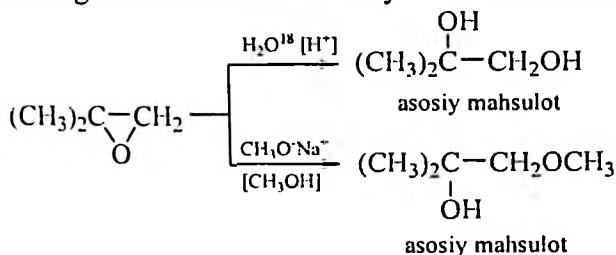
(a) va (e) hollar uchun reaksiya mexanizmlarini keltiring.

55. 1,2- epoksipropan va metiletilefirning quyidagi reagentlarga munosabatini solishtiring:

a) $H_2O[OH^-]$; b) HBr (gaz); d) CH_3CH_2MgBr ; e) $HJ_{(kons)}$.

Reaksiyalarni yozing. Bu birikmalarda reaksiya qobiliyatining farq qilishini tushuntiring.

56. Quyidagi reaksiyalarda izobutilen oksidi epoksid halkasining uzilishini har xilligini ko'rsatuvchi reaksiya mexanizmlarini keltiring.



57. Ishkoriy katalizda trans-2,3-epoksibutanning suv bilan reaksiyasini yozing. Bu o'zgarishning stereokimyoviy mahsuloti qanday (S_N2 - mexanizm).

58. Grinyar reaktivi bilan reaksiyaga kirishmaydigan, ortiqcha miqdor HJ bilan qizdirilganda metilyodid va propil yodid hosil qiladigan $C_4H_{10}O$ birikmasining struktura formulasi qanday?

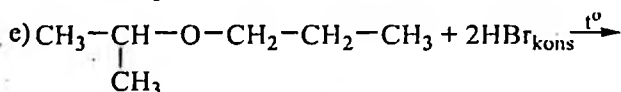
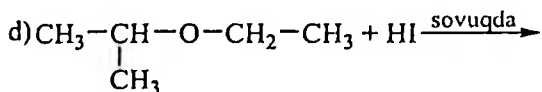
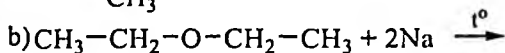
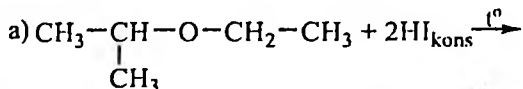
59. IQ-spektrida 3600-3200 sm oblastida yutilish chizig'i bo'lmaydigan $C_3H_{12}O$ birikmasining tuzilishini aniqlang. Bu modda ortiqcha olingan konsentrlangan bromid kislotasi bilan qizdirilganda CH_3Br va C_4H_9Br dan iborat ikkita birikma aralashmasi hosil bo'ladi. C_4H_9Br ishqorning spirtidagi eritmasi bilan qizdirilishidan buten-2 hosil bo'ladi.

60. Quyidagi xossalarga ega bo'lgan $C_4H_{10}O_2$ birikmalar qanday tuzilishga ega: a) CH_3MgJ bilan reaksiyaga kirishishidan metan ajralib chiqadi; b) vodorod xlorid birikmasi bilan C_4H_9OCl hosil bo'ladi, u ishqorning spirtidagi eritmasi bilan qizdirilganda, viniletill efirga aylanadi; d) ortiqcha miqdor HJ bilan qizdirilishidan etilyodid va 1,2-diyodetan hosil bo'ladi. Ko'rsatilgan hamma reaksiyalarning sxemalarini keltiring.

61. Izo-butill spirt $H_2SO_{4(kons)}$ bilan qizdirilganda ikki xil birikma hosil bo'ladi. Ulardan biri $C_3H_{18}O$ tarkibli bo'lib, Na , CH_3MgJ va $KMnO_4$ bilan reaksiyaga kirishmaydi. Ikkinchi $C_8H_{16}O$ tarkibli bo'lib, bromli suv va kaliy permanganat eritmalarini rangsizlantiradi, qattiq

sharoksidlanishidan trimetilsirka kislota va atseton hosil qiladi. Reaksiya mahsulotlari qanday tuzilishga ega? Ularning hosil bo'lish sxemasini yozing.

62.



reaksiya tenglamalarini oxirigacha yozing.

63. Dietil efirga a) konsentrlangan H_2SO_4 ; b) quruq HCl ; d) BF_3 ; e) $\text{CH}_3-\text{CH}_2\text{Na}$ birikmalar ta'sir ettirilganda va u havoda uzoq saqlanganda boradigan reaksiyalar tenglamalarini yozing. Bu reaksiyalar natijasida hosil bo'ladigan mahsulotlarni nomlang.

64. Etilen oksid va; a) $\text{H}_2\text{O}(\text{H}^+)$; b) HCl ; d) $\text{CH}_3\text{OH}(\text{H}^+)$; e) $\text{HOCH}_2-\text{CH}_2\text{OH}(\text{H}^+)$; f) H_2S ; g) NH_3 orasida boradigan reaksiyar sxemalarini yozing.

65. $\text{C}_5\text{H}_{12}\text{O}$ modda natriy bilan qizdirilganda reaksiyaga kirshadi (lekin vodorod ajralmaydi), ortiqcha konsentrlangan HI bilan qizdirilganda CH_3I va $(\text{CH}_3)_2\text{CHCH}_2\text{I}$ aralashmasi hosil bo'ladi. $\text{C}_5\text{H}_{12}\text{O}$ moddaning tuzilishini aniqlang.

66. $\text{C}_5\text{H}_{12}\text{O}$ moddaning IQ-spektrida $3600-3200 \text{ cm}^{-1}$ sohada tebranish yo'q. Uni ortiqcha konsentrlangan HBr bilan qizdirilganda. CH_3Br va $\text{C}_4\text{H}_9\text{Br}$ moddalar aralashmasi hosil bo'ladi. $\text{C}_4\text{H}_9\text{Br}$ ishqorning spirtidagi eritmasi bilan qizdirilganda 2-buten hosil bo'ladi. $\text{C}_5\text{H}_{12}\text{O}$ moddaning tuzilishini aniqlang.

67. To'rt xil usul bilan (tegishli alkil galogeniddan, spirtidan, alkansulfokislota dan va alkendan) 2-propantiol olish reaksiyalari sxemalarini yozing.

68. Etilmerkaptanga: a) HgO ; b) KOH ; d) CH_3COOH ; e) CH_3-CClO ; f) $\text{Pb}(\text{OCOCH}_3)_2$; g) O_2 (havo); h) I_2 ; i) konsentrlangan HNO_3 ni ta'sir ettirilganda boradigan reaksiyalar tenglamalarini yozing. Hosil bo'ladigan moddalarni nomlang.

2, т.2, с. 92-93; 4, 208-b.

5. Metiluchlamchibutil efirni sintezlash uchun qanday alkogolyat va alkil galogenidni reaksiyaga kiritish kerak?

- A) natriy metilat va uchlamchibutil xloridni;
- B) metil bromid va natriy uchlamchi butilat $(\text{CH}_3)_3\text{C}-\text{O}^-\text{Na}^+$ ni
- C) natriy metilat va uchlamchi butil bromidni
- D) natriy metilat va uchlamchibutil yodidni

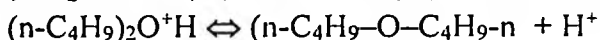
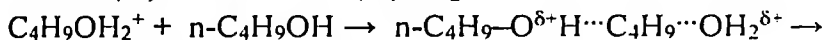
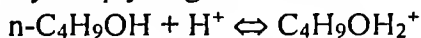
15, с. 536-538.

6. Etil spirtga kons. H_2SO_4 ta'sir ettirilganda reaksiya sharoitiga qarab har xil moddalar hosil bo'ladi. Reaksiya qanday sharoitda o'tkazilganda dietilefir hosil bo'ladi?

- A) xona haroratida
- B) konsentrlangan H_2SO_4 ni ortiqcha olib 40°C da qizdirganda;
- C) 140°C da ortiqcha etil spirtni qo'shib turish bilan;
- D) 180°C da

2, т.2, с. 92; 4, 209-b.; 18, 167-168-b

7. n-butil spirtni kons. H_2SO_4 bilan qizdirib dibutil efir olish reaksiyasi quyidagicha kechadi:

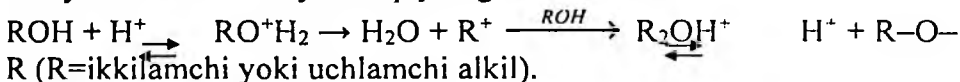


Reaksiya mexanizmini aniqlang.

- A) $\text{S}_{\text{N}}2$
- B) $\text{S}_{\text{N}}1$
- C) $\text{E}_{\text{N}}1$
- D) $\text{E}_{\text{N}}2$

18, 168-b.

8. Ikkilamchi va uchlamchi spirtlarni kons. H_2SO_4 bilan qizdirib oddiy efir olish reaksiyalari quyidagicha kechadi:



R (R=ikkilamchi yoki uchlamchi alkil).

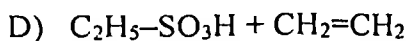
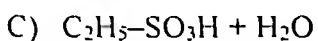
Reaksiya mexanizmini aniqlang.

- A) $\text{S}_{\text{N}}2$
- B) $\text{S}_{\text{N}}1$
- C) $\text{E}_{\text{N}}1$
- D) $\text{E}_{\text{N}}2$

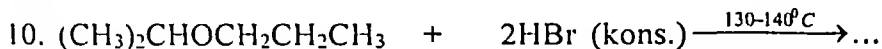
18, 168-b.

9. Quyidagi reaksiya natijasida qanday organik modda (yoki moddalar) hosil bo'ladi:
 $\text{C}_2\text{H}_5\text{-O-C}_2\text{H}_5 + \text{kons. H}_2\text{SO}_4 \rightarrow \dots$

- A) $\left[\text{C}_2\text{H}_5\text{-}\overset{+}{\underset{\text{H}}{\text{O}}}\text{-C}_2\text{H}_5 \right] \text{HSO}_4^-$
- B) $\text{C}_2\text{H}_5\text{-SO}_3\text{H} + \text{C}_2\text{H}_6 + \text{H}_2\text{O}$



2, т.2, с. 96; 4, 208-b.



Reaksiya natijasida qanday modda (yoki moddalar) hosil bo`ladi?

A) izopropil bromid B) *n*-propil bromid va izopropil bromid

C) *n*-propil bromid D) izopropil va *n*-propil spirtlar

1. ч. 2, с. 300; 4, 209-b; 6, 90-b.

11. Dietil efir havoda uzoq vaqt turganda qanday kimyoviy o`zgarishga uchraydi?

A) oz miqdorda etil spirt hosil bo`ladi;

B) oz miqdorda etil spirt va etilen hosil bo`ladi;

C) sekinlik bilan portlovchi gidroperoksid

$(CH_3CH_2OCH(OOH)CH_3)$ hosil bo`ladi;

D) sekinlik bilan etilen hosil bo`ladi;

2. т. 2, с. 98; 4, 209-210-b.

12. Dietil efirga BF_3 ning birikishidan hosil bo`ladigan dietiloksoniy bor triflorid $(C_2H_5)_2O^+ \rightarrow^-BF_3$ molekulasidagi kislorod-bor (O-B) bog`ining tabiati qanday?

A) ionli bog`

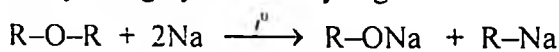
B) qutbsiz kovalent bog`

C) qutbli kovalent bog`

D) donor-aktseptor (koordinatsion) bog`

2. т. 2, с. 96; 4, 208-209-b.

13. Natriy metalli bilan qizdirilganda oddiy efirlar parchalanib, natriy alkogolyat va natriy organik birikma hosil bo`ladi:



Bu reaksiyani kim kashf etgan?

A) Vyurs A. B) Dyuma J. C) Vittig G. D) Shorigin

P.P.

18. 170-b.

14. Oddiy efirlarning IQ-spektrida C-O bog`ining valent tebranishlari qaysi sohalarda kuzatiladi?

A) $1060-1300 \text{ cm}^{-1}$

B) $1350-1380 \text{ cm}^{-1}$

C) $1390-1420 \text{ cm}^{-1}$

D) $1430-1460 \text{ cm}^{-1}$

15, с. 544

15. $C_5H_{12}O$ tarkibli modda natriy metalli bilan reaksiyaga kirishadi (lekin vodorod ajralmaydi), ortiqcha kons. HI bilan qizdirilganda CH_3I

B) tiollar tegishli spirtlarga nisbatan kuchli kislota xossalarini namoyon qiladi;

C) tiol bilan tegishli spirtlarning kislotali xossalari bir xil

D) tiol bilan tegishli spirtlarning kislotali xossalari har xil

18, 176-b.

23. $C_2H_5SH + KOH \rightarrow \dots$

Reaksiya natijasida hosil bo'ladigan organik moddaning tuzilish formulasini aniqlang:

A) $C_2H_5S^-K^+$ B) $C_2H_5SO_3K$ C) $C_2H_5SO_2K$ D) C_2H_5SOK

6, 96-b.

24. Sanoatda dimetilsulfidni oksidlab qanday muhim erituvchi olinadi?

A) dimetilsulfon

B) dimetilsulfoksid

C) metansulfokislota

D) metansulfon kislota

3, 362-b.

25. Sulfonlardagi S=O bog'i qanday bog'?

A) ionli

B) qutbsiz kovalent

C) qutbli kovalent

D) semipolyar (donor-akseptor)

22, 219-220-b.

26. Birikmalarning qaysi biri nisbatan kuchli kislota xossalarini namoyon qiladi?

A) C_2H_5OH

B) H_2S

C) CH_3SH

D) C_2H_5SH

Testlarning javoblari

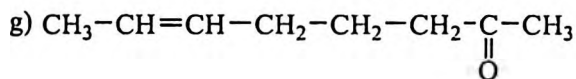
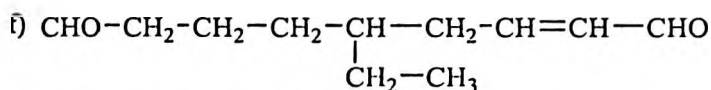
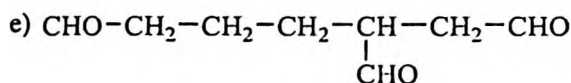
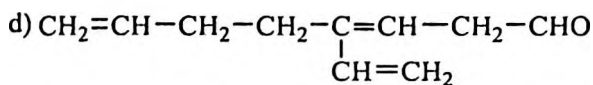
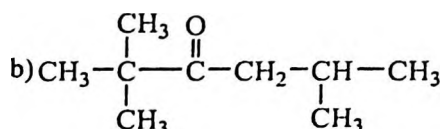
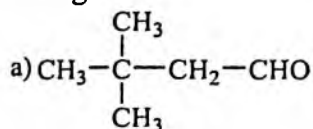
Test	Javob	Test	Javob	Test	Javob
1	B	11	C	21	B
2	D	12	D	22	B
3	D	13	D	23	A
4	D	14	A	24	B
5	B	15	D	25	D
6	C	16	B	26	B
7	A	17	B		
8	B	18	C		
9	A	19	A		
10	B	20	D		

VIII BOB. KARBONIL BIRIKMALAR

Karbonil birikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalriga oid masala va mashqlar

1. Aldegid va ketonlardagi karbonil guruhining elektron tuzilishi va uning uglevodorod radikaliga ta'sirini tushuntiring. C=O va C=C bog'larning o'xshashligi va farqi nimada?

2. Quyidagi birikmalarni sistematik nomenklaturaga binoan nomlang:



3. a) 2-metilpentanal, b) propilizobutilketon, d) 6,7-dimetil-3-oktenal, e) pentaldial, f) 3,5-oktandion, g) 4-oksopentanal, h) 3,4,4-trimetilgeksanal, i) 3-metil-2-pentanalning tuzilish formulalarini yozing.

4. Quyidagi birikmalarning tuzilish formulalarini yozing: a) 2-metilpentanal; b) dipropilketon; d) izobutiluchlamchibutilketon; e) 2,3-dimetilbutanal; f) 2,6-dimetil-4-geptanon.

5. a) 2,3-dimetilbutanal, b) 2-metil-4-pentenal; d) 2,2-dimetil-4-pentanal; e) izovalerian aldegid; f) 2,6-dimetil-4-geptanon; g) 5,5-dimetil-1-geksen-3-on; h) 2,2-dimetil-5-geksin-3-on birikmalarni tuzilish formulalarini yozing va ularni ratsional nomenklaturaga binoan nomlang.

6. $C_5H_{10}O$ tarkibli izomer aldegid va ketonlarning tuzilish formulalarini yozing. Ularni ratsional va sistematiq nomenklaturalarga binoan nomlang.

7. C_5H_8O tarkibli to'yinmagan izomer aldegidlarning tuzilish formulalarini yozing va ularni sistematiq nomenklaturalarga binoan nomlang.

8. $C_6H_{12}O$ tarkibli izomer ketonlarning tuzilish formulalarini yozing. Ularni ratsional va sistematiq nomenklaturalarga binoan nomlang.

9. Bosh zanjirida beshta uglerod atomi bor $C_7H_{14}O$ tarkibli izomer aldegidlarning tuzilish formulalarini yozing va ularni sistematiq nomenklaturalarga ko'ra nomlang.

10. Ketonning oksidlanishidan izomoy va izovalerian kislotalar hamda atseton olindi. Bu ketonning tuzilishini aniqlang.

11. a) akrolein; b) krotan aldegid; d) metilvinilketon; e) vinil-izopropenilketon kabi to'yinmagan aldegid va ketonlarning tuzilish formulalarini yozing va sistematiq nomenklaturalarga ko'ra nomlang.

12. α, β -To'yinmagan karbonil birikmalarning molekulasida reaksiyaga kirishadigan nechta elektrofil markaz bor? Fikringizni elektron formula yordamida bayon qiling.

13. To'yinmagan aldegid va ketonlarning qaysi biri 1,2- va qaysi biri 1,4-birikish reaksiyalariga kirishadi?

14. a) propion aldegid; b) etilmetilketonning aldol kondensatlanishi reaksiyalari tenglamalarini yozing. Hosil bo'ladigan mahsulotlarni sistematiq nomenklaturalarga binoan nomlang.

15. C_4H_8O tarkibli modda kumush ko'zgu reaksiyasiga kirishadi, PCl_5 ta'sirida $C_4H_8Cl_2$ tarkibli birikmani, katalizator ishtirokida qaytarilganda esa 1-butanolni hosil qiladi. Dastlabki moddaning tuzilishini aniqlang.

16. Oksidlaganda izomoy va izovalerian kislotalarni hosil qiladigan, $NaHSO_3$ bilan reaksiyaga kirishmaydigan $C_9H_{18}O$ tarkibli ketonning tuzilishini aniqlang.

17. C_4H_8O tarkibli modda katalitik qaytarilganda ikkilamchi butil spirti hosil qilsa, uning tuzilishini toping.

18. A modda «kumush ko'zgu» reaksiyasiga kirishadi. A moddani oksidlab olingan B modda konsentrlangan sulfat kislota ishtirokida metanol bilan reaksiyaga kirishadi; bunda yoqimli hidga ega bo'lgan C

modda hosil bo'ladi. C modda yondirilganda B modda yondirilganda hosil bo'ladiganidan 1,5 baravar ko'p karbonat anhidrid ajraladi. A,B,C moddalarning formulalarini keltiring. Reaksiyalarning tenglamalarini yozing.

19. 37,7% C, 6,3% H. va 56% Cl dan (massa bo'yicha) tashkil topgan moddaning tuzilish formulasini aniqlang. Shu moddaning 6,35 g bug'i 1,12 l (n.sh.) hajmni egallaydi. Bu modda gidrolizlanganda C, H va O dan tashkil topgan modda hosil bo'lib, qaytarilganda ikkilamchi spirt hosil bo'ladi.

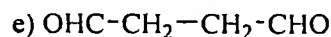
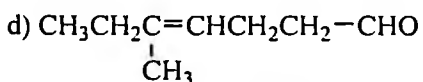
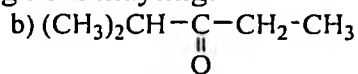
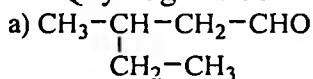
20. 1,17 g aldegid va propanol-1 ning aralashmasiga 5,8 g kumush oksidining ammiakdagi eritmasi qo'shib sekin qizdirildi. Tushgan cho'kma filtrlab olinib, ortib qolgan kumush oksidi kumush xloridiga aylantirilganda uning massasi 2,87 g keldi. Aldegid va spirt 3:1 molyar nisbatda aralastirilgan bo'lsa, aldegidning tuzilishini aniqlang.

21. Tarkibida C_4H_8O bo'lgan aldegid va ketonlarning hamma izomerlari struktura formulasini yozing. Ularning ratsional va xalqaro nomenklatura bo'yicha nomlanishi, shuningdek, mumkin bo'lgan izomerlar uchun tasodifiy nomlarini keltiring.

22. Birikmalarning tuzilish formulasini keltiring, ratsional nomlanishga ko'ra nomini ayting; a) pentanal b) 3-metilbutanal; d) pentanon-2; e) 4- metilpentanon-2; f) 3-butenal; g) pentin-4-on-2.

23. Quyida keltirilgan birikmalarning xalqaro nomlanishga ko'ra nomini ayting: a) propion aldegid; b) atseton; d) izovalerian aldegid; e) metilizobutilketon; f) etilvinilketon; g) formilsirka aldegid; h) diatsetil.

24. Quyidagi karbonil birikmalarning nomini ayting:



25. Quyidagi shartlarga mos keladigan birikmalarning tuzilish formulasini yozing va nomini ayting:

a) α - C-atomida vodorod bo'lmagan $C_5H_{10}O$ tarkibli aldegid; b) normal tuzilishli $C_5H_{10}O$ tarkibli metil keton; d) xiral molekularlik

$C_5H_{10}O$ tarkibli aldegid; e) sis- va trans- izomerlari mavjud bo'lgan C_4H_6O tarkibli aldegid.

26. Formaldegid molekulasining atom-orbital modelini tasvirlang. Mavjud bog'larning qutblanuvchanligini xarakterlang. $C=O$ va $C=C$ bog'larning o'xshashligi va farqi nimada? MO nazariyasiga binoan formaldegid molekulasining tuzilishini ta'riflang.

27. Quyidagi faktlarni izohlang: a) aldegid yoki ketonlarning qaynash harorategishli spirtning qaynash haroratidan yuqori; b) aldegid va keton quyi vakillari tegishli uglevodorodlarga nisbatan $50-80^{\circ}C$ yuqori haroratda qaynaydi; d) aldegid va ketonlarning quyi vakillari sezilarli miqdorda suvda eriydi.

28. Moy aldegidida karbonil gruppaning uglevodorod radikaliga ta'sir etishini xarakterlang. Bu molekulada qaysi vodorod atomi nisbatan harakatchan bo'ladi va nima uchun?

29. a) Vinil sirka aldegid va b) krotan aldegidlarining tuzilishlarini solishtiring. Har ikkala holatda aldegid gruppaning qo'shbog'ga ta'sir etishini ko'rsating.

30. Keten tuzilishini tasvirlang. Molekulaning atom-molekulyar modelini keltiring. Uglarod atomlarining gibridlanishini ko'rsating. Nima sababdana $C=C$ va $C=O$ bog'lar tutashmagan?

31. Yenollanish deb qanday jarayonga aytiladi? Propion aldegid va dietilketon uchun yenol shaklini keltiring. Nega yenollanish tautomeriyaning ayrim ko'rinishi bo'lib hisoblanadi. Qanday karbonil birikmalar yenol shakliga o'ta olmaydi?

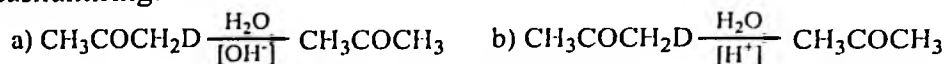
32. Asosli kataliz sharoitida atsetonning yenollanish mexanizmini keltiring. Bu jarayonning birinchi bosqichida hosil bo'ladigan karbanionning tuzilishini xarakterlang. Nima sababdan yenollanish $CH_3COCH_3 < CH_3COCH_2Cl < CH_3COCHCl_2$ qatorida ortishini izohlang.

33. Keltirilgan har bir birikma uchun asosiy yenol shaklini keltiring: a) metiletiketone; b) metil-uchlamchi-butiketone; d) pentandion-2,4. Ularni izohlang.

34. Asos ($NaOH$) ishtirokida pentandion-2,4 ning yenollanish mexanizmini ko'ring. Nima sababdan bu ketonning yenollanish tezligi atsetonnikiga nisbatan 10' marta ko'p? Nega atseton uchun keton shakli, pentandion-2,4 uchun esa yenol shakli barqaror?

35. Kislotali kataliz sharoitida propion aldegidining yenollanish mexanizmini keltiring.

36. Quyidagi reaksiyalarda deyteriyning vodorod almashishini tushuntiring:



37. Butanol-1 dan qaysi reaksiyalar yordamida butanon olish mumkin?

38. Etanoldan 3-geksanonni sintez qiling.

39. Etanol va noorganik reaktivlardan 2-metil-3-pentanonni sintez qilish sxemasini tuzing.

40. a) chumoli va propion kislotalarning kalsiyli tuzlari b) sirka va izovalerian kislotalarning kalsiyli tuzlari piroliz qilinganda qaysi karbonilli birikmalar hosil bo'ladi?

41. a) izovalerian aldegid; b) trimetilsirka aldegid; d) metiletilketon; e) 3,4-dimetil-2-pentanonni olish uchun qaysi spirtlar katalitik degidrogenlash kerak? Bu reaksiya tenglamalarini yozing va borish sharoitini ko'rsating.

42. a) 2,3-dimetil-1-pentanol; b) 3,3-dimetil-1-butanol; d) 3-metil-2-butanol; e) 3,3-dimetil-2-butanol; f) 2,4-dimetil-3-pentanol spirtlar katalizatorlar ishtirokida yuqori haroratda havo bilan oksidlanganda qanday aldegid va ketonlar hosil bo'ladi? Bu reaksiyalarning tenglamalarini yozing. Hosil bo'lgan aldegid va ketonlarni nomlang.

43. a) 3,3-dimetil-1-pentanol; b) 2,2-dimetil-3-pentanol; d) 2-metil-3-geptanol; e) 2,6-dimetil-4-geptanol; f) 2,2,5-trimetil-3-geksanolni xromli aralashma bilan oksidlaganda qanday oksobirikmalar hosil bo'ladi?

44. Bu oksidlanish-qaytarilish reaksiyalari tenglamalarini tuzing va tenglamalarning koeffisientlarini yozing.

45. a) etilen; b) 1-buten; d) 1-penten; e) 1-gepten alkenlarga CO va H₂ ning to'g'ridan-to'g'ri birikishi (oksosintez yoki alkanlarni gidroformillash) dan qanday aldegidlar hosil bo'ladi? Oksosintez mexanizmini keltiring.

46. a) moy aldegid; b) izovalerian aldegid; d) dipropilketon; e) metilizobutylketonni olish uchun qaysi karbon kislotalarning kalsiyli tuzlarini piroliz qilish kerak?

47. a) izomoy va chumoli; b) sirka va propion; d) sirka va izovalerian; e) izomoy va moy; g) izomoy va valerian kislotalar

kalsiyli tuzlari aralashmasi piroliz qilinganda qanday aldegid va ketonlar hosil bo'ladi? Reaksiya tenglamalarini yozing.

48. a) 2,2-dixlorbutan; b) 1,1-dibrom-2,2-dimetilpropan; d) 2,2-dixlor-3-metil geksan; e) 1,1-dixlor-2-metilbutan geminal digalogenli hosilalarning gidrolizlanishidan qanday aldegid va ketonlar hosil bo'ladi? Sodir bo'ladigan reaksiya tenglamalarini yozing.

49. a) etilizopropilketon; b) 3-metilpentanal; d) 2-metil-3-etilgeksanal; e) 2,2,4-trimetil-3-geksanonni olish uchun qaysi geminal digalogeialkanlarni gidrolizlash kerak?

50. Karbon kislotalar yoki ularning aralashmasi 300-450°C da katalizatorlar (ThO_2 , MnO_2 , CaO , ZnO) ustidan o'tkazilganda aldegid va ketonlar hosil bo'ladi. Shunday sharoitda: a) sirka va chumoli kislotalar aralashmasidan; b) moy kislotadan; d) propion va valerian kislotalar aralashmasidan; e) izomoy va kapron kislotalar aralashmasidan qanday moddalar hosil bo'ladi?

51. a) metilizopropilketon; b) 2,6-dimetil-4-oktanon, d) izobutilizoamil keton; e) metilneopentilketonni qaysi atsetilen uglevodorodlarning katalitik gidratlanishidan (M.G.Kucherov reaksiyasi) olish mumkin?

52. Sulfat kislota katalizatorligida boradigan 1,2-glikollarning qayta guruhlanishi (pinakon-pinakolinli qayta guruhlanishlar) aldegid va ketonlar olishning qulay usulidir. 2,3-dimetil-2,3-butandiolni (pinakonni) 3,3-dimetil-2-butanonga (pinakolinga) qayta guruhlanish reaksiyasi mexanizmini keltiring. Shunday sharoitda 2,3-dimetil-2-3-pentandioldan qanday ketonlar xosil bo'ladi?

53. a) izobutilen \rightarrow izomoy aldegid; b) moy aldegid \rightarrow metiletilketon; d) 2-brombutan \rightarrow metiletilketon; e) propilen \rightarrow propion aldegid; f) etil spirt \rightarrow atseton; g) etan \rightarrow sirka aldegid; h) atsetilen \rightarrow metiletil keton.

54. kimyoviy aylanishlar reaksiya tenglamalarini yozing. Bu reaksiyalarning borish sharoitini ko'rsating.

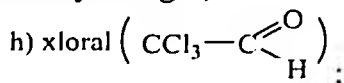
55. a) chumoli aldegid; b) sirka aldegid; v) atseton sanoatda qanday usullar bilan olinadi? Tegishli reaksiyalar tenglamalarini yozing va ularning kechish sharoitini kursating.

56. $\text{C}_5\text{H}_{10}\text{O}_5$ tarkibli tabiiy modda kumush ko'zgu reaksiyasini berib, vodorod xlorid katalizatorligida metanol bilan metil efiri hosil qiladi, fosfor bilan iodid kislota qushib qizdirilganda esa 2-iodpentan

hosil bo'ladi. Boshlan-g'ich moddaning va o'zgarishlarda hosil bo'lgan mahsulotlarni tuzilishini ko'rsating. Shu moddadan 2-yodpentan hosil bo'lish reaksiyasini yozing.

57. Etilenni oksidlash uchun 5,6 l (n.sh.) kislorod sarflangan bo'lsa, hosil bo'lgan aldegidning massasini toping.

58. a) sirka aldegid; b) chumolialdegid; d) dietilketon; e) xlorsirka aldegid; f) atseton; g) izomoy aldegid,



etilpropilsirka aldegidni nukleofil biriktirib olish reaksiyalariga kirishish qobiliyatining oshib borish tartibida joylashtiring.

Javobingizni elektron siljishlar nazariyasi yordamida asoslang.

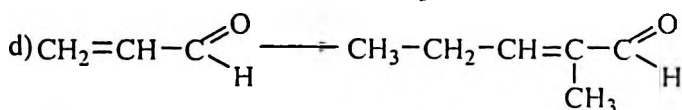
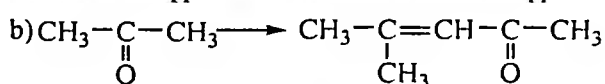
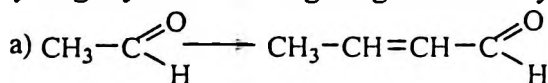
59. Moy aldegid va a) natriy gidrosulfit bisulfit; b) sianid kislota; d) etil spirt (1 mol); e) etil spirt (2 mol); f) ammiak; g) metilamin; h) nikel ishtirokida H_2 ; i) xlor orasida boradigan reaksiyalar tenglamalarini yozing.

60. Atseton va propion aldegid bilan a) brom; b) PBr_5 ; d) $\text{NH}_2\text{-NH}_2$; e) NH_2OH ; f) $\text{C}_6\text{H}_5\text{-NH-NH}_2$; g) $\text{H}_2\text{N-NH-CO-NH}_2$ orasida boradigan reaksiyalar tenglamalarini yozing. Hosil bo'ladigan mahsulotlarni nomlang.

61. a) moy aldegid; b) atseton; d) metiletilketonning aldol kondensatlanishi reaksiyalari tenglamalarini yozing. Hosil bo'ladigan mahsulotlarni sistematik nomenklaturaga binoan nomlang.

62. Hidroksil-ion katalizatorligida boradigan aldol kondensatlanishi reaksiyasining mexanizmini keltiring.

63. Quyidagi aylanishlarning tenglamalarini yozing:



Bu reaksiyalarning borish sharoitini ko'rsating, oraliq va oxirgi mahsulotlarni nomlang.

64. a) chumoli aldegid; b) trimetilsirka aldegidga ishqorning konsentrlangan eritmasi ta'sir ettirilganda boradigan oksidlanish-qaytarilish reaksiyalari (Kannitsaro reaksiyasi) tenglamalarini yozing. Bu reaksiyalarning mexanizmini keltiring.

65. a) sirka aldegid; b) propion aldegid; d) moy aldegid; e) izomoy aldegidga suvsiz muhitda alyuminiy etilat $\text{Al}(\text{OC}_2\text{H}_5)_3$ ta'sir ettirilganda boradigan murakkab efir kondensatlanishi reaksiyalari (V.E.Tishchenko reaksiyasi) tenglamalarini yozing.

66. Chumoli aldegid va boshqa reagentlardan foydalanib

a) akrolein $\left(\text{CH}_2=\text{CH}-\overset{\text{O}}{\underset{\text{H}}{\text{C}}} \right)$; b) metalvinilketon hosil qiling.

Bu reaksiyalarning boorish sharoitini ko'rsating., oraliq mahsulotlarni nomlang.

67. Kumush ko'zgu va mis (II) gidroksid bilan oksidlanish reaksiyalari aldegidlarga xos sifat reaksiyalaridir. a) sirka aldegid; b) izomoy aldegid; d) 3-metilpentanalga kumush oksidning ammiakdagi eritmasi va mis (II) –gidroksid ta'sir ettirilganda boradigan reaksiyalar tenglamalarini yozing.

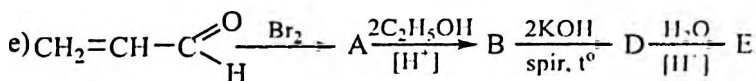
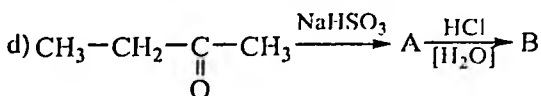
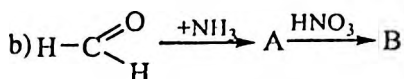
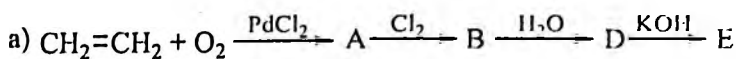
68. a) etilpropilketon; b) etilizobutilketon; d) dipropilketon; e) izopropilbutilketonni xromli aralashma bilan oksidlaganda qanday birikmalar hosil bo'ladi?

69. Ketonning oksidlanishidan moy, izomoy, valerian va izovalerian kislotalar olinadi. Bu ketonning tuzilishini aniqlang.

70. Formaldegidning trimerlanish va polimerlanish, sirka aldegidning esa tremerlanish reaksiyalari sxamalarini keltiring. Bu reaksiyalar qanday sharoitlarda boradi?

71. Keton bilan a)suv; b) etil spirt; d) sirka kislota; e) amiyak; f) HCl; g) kraton aldegid; h) atseton qrasida boradigan reaksiyalar tenglamalarini yozing. Bu reaksiyalardan hosil bo'lgan mahsulotlarni nomlang.

72.



aylanishlar tenglamalarini yozing.

73. Akrolein va a) $\text{Br}_2[\text{CCl}_4]$; b) HBr ; d) H_2/Ni ; e) $\text{HCN} [\text{OH}]^-$; f) NaHSO_3 ; $[\text{Ag}(\text{NH}_3)_2]\text{OH}$; g) NH_2OH reagentlar orasida boradigan reaksiyalar tenglamalarini yozing.

74. Atseton va reagentlardan foydalanib. a) N.M. Kijner reaksiyasi bo'yicha propan; b) izomoy kislota; d) sirka anhidridni sintez qilin.

75. Oksidlanganda atseton va izomoy kislota hosil qiladigan. NaHSO_3 bilan reaksiyaga kirishmaydigan $\text{C}_7\text{H}_{14}\text{O}$ tarkibli ketonning tuzilishini aniqlang.

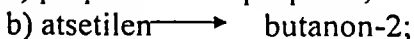
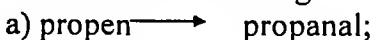
76. $\text{C}_4\text{H}_8\text{O}$ tarkibli modda kumush ko'zgu reaksiyasini beradi. Bu modda PCl_5 ta'sirida $\text{C}_4\text{H}_8\text{Cl}_2$ tarkibli birikmani, katalizator ishtirokida qaytarilganda 1-butanolni hosil qiladi. Dastlabki moddaning tuzilishini aniqlang.

77. $\text{C}_5\text{H}_8\text{O}$ tarkibli modda kumush oksidning amiyakdagi eritmasi bilan reaksiyaga kirishmaydi, bromlanganda $\text{C}_5\text{H}_8\text{Br}_2\text{O}$ ni, ozonoliz qilinganda esa sirka aldegid va CO_2 ga oson parchalanadigan modda $\text{C}_3\text{H}_4\text{O}_2$ ni hosil qiladi. $\text{C}_5\text{H}_8\text{O}$ moddaning tuzilishini aniqlang.

78. To'yingan alifatik aldegidlarning IQ-spektrlarida $\text{C}=\text{O}$ va aldegid guruh $\text{C}-\text{H}$ bog'larining valent tebranishlari qaysi sohalarda kuzatiladi?

79. 1-butenga; b) 1-pentenga; d) 1-geptenga CO va H_2 ni to'g'ridan-to'g'ri birikishi (okso-sintez) dan qanday aldegidlar hosil bo'ladi?

80. Kimyoviy aylanishlarni amalga oshiring. Bu reaksiyalarning borish sharoitini ko'rsating:



d) moy aldegid \longrightarrow butanon-2;
e) izobutilen \longrightarrow izomoy aldegid;

81. a) geksanon-3; b) heptanon-4; d) butilizopropilketonni xromli aralashma bilan oksidlaganda qanday birikmalar hosil bo'ladi?

82. a) propanal; b) butanal; d) izomoy aldegidga suvsiz muhitda alyuminiy etilat ta'sir ettirilganda boradigan kondensatlanish reaksiyalari tenglamalarini yozing.

83. Atseton va boshqa reagentlardan foydalanib: a) propan; b) izomoy kislota; d) sirka anhidridni sintez qiling.

84. $C_5H_{10}O$ tarkibli modda natriy gidroksid ishtirokida yangi cho'ktirilgan mis(II)-gidroksidi bilan reaksiyaga kirishadi. Katalizator ishtirokida vodorod bilan qisman qaytarilganda esa, simmetrik ikkilamchi spirt, to'liq qaytarilganda n-pentan hosil bo'ladi. Boshlang'ich moddani aniqlab, sistematik nomenklatura bo'yicha nomlang.

85. Massasi 19,3 g bo'lgan sirka va propion aldegidlari aralashmasi katalitik gidrogenlanganda 8,06 l (n.sh.) vodorod sarf bo'ldi. Dastlabki aralashmadagi sirka aldegidning massa ulushini (%) aniqlang.

86. Etilenni 5,6 l (n.sh.) kislorod bilan oksidlaganda hosil bo'ladigan sirka aldegidning massasini hisoblang.

87. Uchta kavsharlangan ampulada uch xil gaz (butan, propan va formaldegid) bor. Qaysi ampulada qanday gaz borligini aniqlang. Zarur reaksiya tenglamalarini keltiring.

88. Aldegid va 1-propanolning 1,17 g aralashmasiga 5,8 g kumush oksidining ammiakdagi eritmasidan qo'shib, sekin qizdirildi. Tushgan cho'kma filtrlandi va reaksiyaga kirishmagan kumush oksidini massasi 2,87 g ga teng bo'lgan kumush xloridiga aylantirildi.

Dastlabki aralashmada aldegid va spirtning molyar nisbati 3:1 ga tengligini hisobga olib, aldegidning tuzilishini aniqlang.

89. Vodorodga nisbatan zichligi 4,5 ga teng bo'lgan formaldegid va vodorod aralashmasi nikelli katalizator ustidan o'tkazilib, 0°C gacha sovutilgandan so'ng vodorodga nisbatan zichligi 3 ga teng bo'ldi. Reaksiya mahsulotining unumini hisoblang.

90. 17,8 g chumoli va sirka aldegidlar aralashmasini tegishli spirtlargacha katalitik gidrogenlash uchun 11,2 l (n.sh.) vodorod sarf bo'ldi. Aldegidlar aralashmasi tarkibini (massa bo'yicha % larda) aniqlang.

91. Ketonlarning murakkab efirlar bilan o'zaro kondensatlanish reaksiyasi natijasida qanday birikmalar hosil bo'ladi?

92. Dialdegidlar va diketonlar oksidlanganda qanday birikmalar hosil bo'ladi?

93. Glioksal, butadion, atsetilatseton kabi dikarbonil birikmalarning qaysi biri oraliq metallar bilan barqaror xelat birikmalar hosil qiladi?

94. Diatsetil dioksimi (Chugaev reaktivi) va uning Ni(II) ioni bilan hosil qilgan kompleks birikmasi formulalarini yozing.

95. Monokarbonil- va β -dikarbonil birikmalarning keto-yenol tautomeriya hodisasini namoyon qilishda keskin farqi borligini qanday tushuntirasiz.

96. Ikki molekula sirka aldegidining aldol-kroton kondensatlanishidan qanday birikma hosil bo'ladi? Reaksiya tenglamalarini yozing.

97. Chumoli aldegidi va atsetonning o'zaro aldol-kroton kondensatlanish reaksiyasi tenglamasini yozing.

98. Nukleofil reagentlar bilan boradigan reaksiyalarda quyidagi karbonilli birikmalarni aktivligi kamayib borish tartibini ko'rsating: a) $\text{CH}_3\text{-CH}_2\text{-CHO}$; b) $\text{C}_6\text{H}_5\text{-CHO}$; d) $\text{C}_6\text{H}_5\text{-CO-C}_6\text{H}_5$; e) $\text{CH}_3\text{-CO-C}_6\text{H}_5$; f) $\text{CH}_3\text{-CO-CH}_3$.

99. 1,1-dibrom-3-metilpentan gidrolizining tenglamasini yozing.

100. Formaldegidga natriy gidrosulfit birikishining tenglamasini yozing.

101. Propion aldegidga sianid kislota birikishi reaksiyasining mexanizmini ko'rsating.

102. Trixlorsirka aldegidiga suv birikishi reaksiyasining tenglamasini yozing. Nima uchun hosil bo'lgan mahsulot formaldegidning gidratidan barqaror bo'ladi?

103. a) propanal; b) butanon; d) benzofenonga fosfor (V)-xloridi ta'sir ettirilganda qaysi moddalar hosil bo'ladi?

104. Havodan bir oz yengil bo'lgan hidsiz A gaz palladiy va mis xloridlari ishtirokida kislorod bilan oksidlanganda B moddaga aylanadi. B modda bug'lari vodorod bilan qizdirilgan nikel katalizatori ustidan o'tkazilganda narkotik ta'sirga ega C modda hosil bo'ladi. A,B,C moddalarning formulalarini keltiring. Reaksiyalarning tenglamalarini yozing.

105. Qariyb hidsiz, havodan bir oz yengil, rangsiz gaz A, palladiy va mis xloridlari ishtirokida kislorod bilan oksidlanganda B moddaga aylanadi. Bu modda mis(II)-gidroksidi ta'sirida oksidlanib suvli eritmasi kislotali muhitga ega bo'lgan C moddani hosil qiladi. A,B,C moddalarning formulalarini keltiring. Reaksiyalarning tenglamalarini yozing.

106. Organik moddalar tuzilish nazariyasiga asoslanib, propenalning kimyoviy xossalarini bashorat qiling. Tegishli reaksiyalarning tenglamalarini yozing.

107. 20 kg 20% li aldegid eritmasini olish zarur bo'lsa ikki bosqichda aldegid olish uchun 20% qo'shimchalari bo'lgan kalsiy karbiddan qancha olish kerak (unum har bir bosqichda 80% ga teng).

108. 17,8 g chumoli va sirka aldegidlari aralashmasini tegishli spirtlarga katalitik gidrogenlash uchun 11,2 l (n.sh.) vodorod sarflandi. Aralashmadagi aldegidlarning massa ulushlarini toping.

109. 12,5 g metil spirtini katalitik oksidlab, CO_2 dan tozalangan mahsulotga kumush oksidining ammiakdagi eritmasi ta'sir ettirilganda 43,2 g cho'kma hosil bo'lib, shunday miqdordagi aralashma mo'l miqdordagi bariy karbonat bilan ishlov berilganda 1,12 l (n.sh.) gaz ajraldi. Oksidlangandan keyin aralashmada qancha metil spirti qolganligini aniqlang.

110. 1 mol noma'lum organik modda kaliy permanganatning suvli eritmasi bilan ishlov berilganda 46 g K_2CO_3 , 66,7 g KHCO_3 , 116,0 g MnO_2 va suv hosil bo'ldi. Qaysi modda oksidlangan? Bu moddaning eng yaqin gomologining kaliy permanganat bilan kislotali muhitda oksidlanish reaksiyasi tenglamasini yozing.

111. 1,2 mol bir atomli birlamchi spirt havo bilan aralashtirilib, qizdirilgan mis to'r orqali o'tkazildi. Reaksiya aralashma Sovutilgach, kumush oksidining ammiakli eritmasi orqali o'tkazilganda 129,6 g cho'kma hosil bo'lib, u filtrlab olindi. Eritma kislotali muhitga keltirilib, efir bilan ekstraksiya qilindi. Efir haydalgandan aralashma konsentrlangan sulfat kislota qo'shib qizdirildi. Bunda 52,8 g murakkab efir hosil bo'ldi. Oksidlanish qanday unum bilan borgan va qaysi efir hosil bo'lgan?

Karbonil birikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. C_5H_8O tarkibli to'ynmagan aldegidning nechta izomeri bo'lishi mumkin?

- A) oltita B) yettita C) sakkizta D) to'qqizta

2. Bosh zanjirida 5 ta uglerod atomi bor $C_7H_{14}O$ tarkibli aldegidning nechta izomeri bo'lishi mumkin?

- A) yettita B) sakkizta C) to'qqizta D) o'nta

3. $HC\equiv C-CH_2-\underset{\text{CH=CH}_2}{\underset{H}{C}}-C\underset{O}{\underset{H}{\parallel}}-C$ tuzilishli birikmani sistematik

CH=CH₂ H nomenklaturaga binoan nomini ko'rsating.

- A) 5-vinil-5-gepten-1-inal B) 3-vinil-2-gepten-6-inal
C) β-vinil-γ-propargilpropenal D) β-vinil-γ-propargiletanaldegid

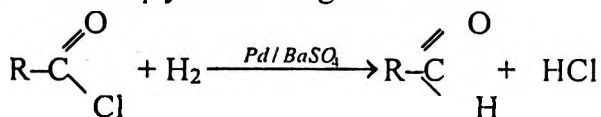
4, 250-b; 6, 102-b.

4. Propion va valerian kislotalar kalsiyli tuzlarining aralashmasi piroliz qilinganda qanday oksobirikma(lar) hosil bo'ladi?

- A) faqat dietilketon;
B) faqat dibutilketon;
C) dietilketon va dibutilketon;
D) dietilketon, etilbutilketon va dibutilketon;

4, 223-b; 18, 263-b.

5. Karbon kislotalar xlorangidridlarini palladiy ishtirokida vodorod bilan qaytarib aldegidlar olinadi:

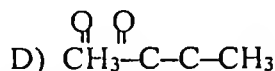
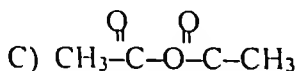
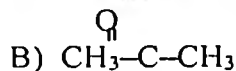
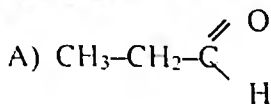


Bu reaksiya kimning nomi bilan yuritiladi?

- A) V. Rodebush B) O. Roelen
C) Rozenmund D) C. Ruemann

4, 222-b; 11, c. 345; 18, 264-b.

6. Reaksiyaning oxirgi mahsulotining tuzilishini aniqlang.
 $\text{CH}_3\text{-CH}_2\text{-OH} \xrightarrow{\text{Na, Cr}_2\text{O}_7 + \text{H}_2\text{SO}_4} \dots \xrightarrow{\text{Cu(OH)}_2} \dots \xrightarrow{\text{piroliz}} \dots$



7. Atsetonning olinish usullaridan qaysi biri sanoatda ishlatiladi?

- A) kalsiy atsetatning pirolizi;
 B) 2,2-dixlorpropanni gidrolizlash;
 C) M.G. Kucherov reaksiyasi bilan metilatsetilendan olish;
 D) ikki usulda propendan: a) propen → propanol-2 → atseton
 b) propen → kumol(izopropilbenzol) → kumol gidroperoksidi → atseton + fenol

8. Akrolein $\text{CH}_2=\text{CH-CHO}$ sanoatda qanday olinadi?

- A) allil spirtni oksidlab;
 B) propenni CuO ishtirokida 300-400°C da havo bilan oksidlab;
 C) 3,3-dixlor-1-propenni gidrolizlab
 D) glitserinni suvsiz KHSO_4 bilan qizdirib;

2, τ.2. c. 193; 3, c. 461

9. Oksobirikmalarning qaysi biri A_N reaksiyalariga eng qiyin kirishadi?

- A) chumoli aldegid B) atseton
 C) diuchlamchibutilketon D) etanal

10, 1. c. 474

10. Birikmalarning qaysi biri A_N reaksiyalariga eng oson kirishadi?

- A) metanal B) pentanon-3
 C) izomoy aldegid D) xloral (trixloratsetaldegid)

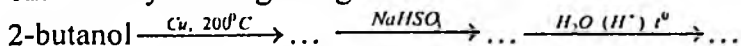
4, 232-233-b.

11. Birikmalarning qaysi biri natriy gidrosulfit (bisulfit) bilan reaksiyaga kirishmaydi?

- A) propanal B) izomoy aldegid
 C) atseton D) 2,2,4-trimetilpentanon-3

4, 233-b; 15, c. 610

12. Reaksiyalarning oxirgi mahsuloti nomini ko`rsating.



- A) propannitril B) butan kislota
C) butanon-2 D) propansulfokislotaning natriyli tuzi

13. $(CH_3)_2CH-CH=N-NH-\overset{O}{\parallel}C-NH_2$ tarkibli semikarbazon qaysi oksibirikmaga tegishli?

- A) atseton B) moy aldegid C) propion aldegid D) izomoy aldegid

4, 236-237-b; 18, 277-b.

14. Oksobirikmalarning qaysi biri aldol kondensatsialanish reaksiyasiga kirishmaydi?

- A) atseton B) trimetil sirka aldegid
C) izomoy aldegid D) sirka aldegid

18, 280-b.

15. Akroleinning qo`sh bog`iga tegmasdan faqat aldegid guruhini oksidlash uchun qaysi oksidlovchidan foydalaniladi?

- A) kaliy permanganatning suvdagi eritmasidan
B) $K_2Cr_2O_7+H_2SO_4$ dan
C) Cr_2O_3 dan
D) kumush oksidning ammiakli eritmasidan

13, 203-b.

16. Noma'lum tuzilishli aldegidga NaOH ning 50 % li eritmasini ta'sir ettirganda (Kannitssaro reaksiyasi) neopentil spirt va trimetilsirka kislotaning natriyli tuzi hosil bo`ladi. Oksidlanish-qaytarilish reaksiyasiga kirishgan aldegidning nomini toping.

- A) izopropilsirka aldegid B) metiletilsirka aldegid
C) trimetilsirka aldegid D) propilsirka aldegid

4, 239-b.

17. C_4H_8O tarkibli modda kumush ko`zgu reaksiyasiga kirishadi, PCl_5 ta'sir ettirganda $C_4H_8Cl_2$ tarkibli birikmaga, katalizator ishtirokida qaytarilganda esa 1-butanolga aylanadi. Dastlabki moddaning nomini ko`rsating.

- A) izomoy aldegid B) moy aldegid C) butanon-2
D) metiletilketon

18. C_5H_8O tarkibli modda kumush oksidining ammiakli eritmasi bilan reaksiyaga kirishmaydi, bromlaganda $C_5H_8Br_2O$ ni, ozonoliz

qilinganda esa sirka aldegid va CO₂ ga oson parchalanadigan C₃H₄O₂ moddani hosil qiladi. C₅H₈O moddaning tuzilishini aniqlang.

- A) $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\text{CH}=\text{CH}_2$ B) $\overset{\text{O}}{\parallel}{\text{C}}\text{H}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}=\text{CH}-\text{CH}_3$
 C) $\text{CH}_2=\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\text{CH}_3$ D) $\overset{\text{O}}{\parallel}{\text{C}}\text{H}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}=\text{CH}_2$

19. Quyidagi reaksiya qaysi olimning nomi bilan yuritiladi?
 $\text{OHC}-\text{CHO} + \text{NaOH} \rightarrow \text{HO}-\text{CH}_2-\text{COONa}$

- A) L. Klayzen B) J. Krafts
 C) E. Knevenagel D) S. Kannitssaro

19, кн. I, с. 155

20. Diketonlarning qaysi biri ikki va uch valentli metallar bilan ichki kompleks (xelat) birikma hosil qilmaydi?

- A) $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$ B) $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$
 C) $\text{CH}_3-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$ D) $\text{CH}_3-\underset{\text{CH}_3}{\text{CH}}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$

19, кн. I, с. 156-157

21. Aldegid va ketonlarning IQ-spektrlarida karbonil guruhining valent tebranishlari qaysi sohada kuzatiladi?

- A) 1860-1890 sm⁻¹ B) 1795-1830 sm⁻¹
 C) 1710-1750 sm⁻¹ D) 1620-1650 sm⁻¹

17, с. 45

22. PMR-spektrlarda aldegid guruhi -CHO protonining kimyoviy siljishi qiymati δ shkalasida necha m.h. ga teng?

- A) 9-10 m.h. B) 1,5 m.h. C) 2-4 m.h. D) 4,6-5,9 m.h.

15, с. 618

23. To'yingan aldegid va ketonlarning UB-spektrlarida yutilish maksimumi qaysi sohada kuzatiladi?

- A) 270-300 nm B) 173 nm C) 210 nm D) 200 nm

15, с. 618

24. Chumoli, sirka, propion va moy aldegidlarning mass-spektrlarida qanday bir xil asosiy pik kuzatiladi?

- A) m/e 29 B) m/e 31 C) m/e 33 D) m/e 35

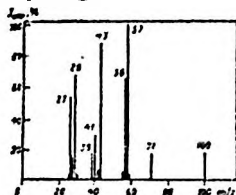
15, с. 618-619

25. Aldegid va ketonlar UB-spektrida yutilish maksimumi qaysi sohada yotadi?

- A) 265 nm B) 245 nm C) 280 nm D) 230 nm

8, c. 176

26. Ko'rsatilgan rasmdagi mass-spektrga qarab $C_6H_{12}O$ tarkibli ketonning tuzilishini aniqlang.



- A) geksanon-2 B) geksanon-3
 C) 2-metilpentanon-3 D) 3-metilpentanon-2
 17, c. 123

27. 4-metilpentanon-2-ol-4 ning PMR-spektrida necha tipdagi noekivalent protonlarning signallari qayd etiladi?

- A) 7 tip B) 6 tip C) 5 tip D) 4 tip

17, c. 76

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	B	11	D	21	C
2	A	12	C	22	A
3	B	13	D	23	A
4	D	14	B	24	A
5	C	15	D	25	C
6	B	16	C	26	C
7	D	17	B	27	D
8	B	18	B		
9	C	19	D		
10	D	20	B		

IX BOB. KARBON KISLOTALAR VA ULARNING HOSILALARI

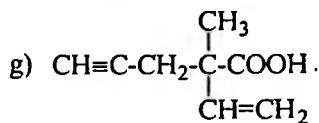
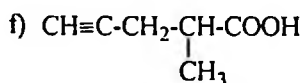
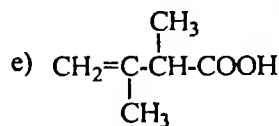
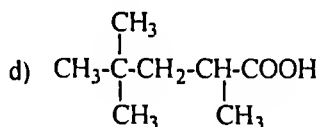
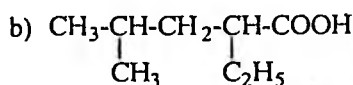
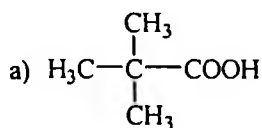
Karbon kislotalar va ularning hosilalarining nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalariga oid masala va mashqlar

1. Karboksil guruhining elektron tuzilishini tushuntiring (rezonans strukturalarini yozing). Undagi karbonil va gidroksil guruhlar bir-biriga qanday ta'sir ko'rsatadi?

2. Karboksilat - anionining rezonans strukturalarini va mezo-formularini keltiring.

3. a) metilizopropilsirka kislota; b) β -metil- γ -etilenant kislota; d) dimetil-uchlamchibutilsirka kislota; e) metiletinilsirka kislota; f) metilizopropilallsirka kislota; g) kaprin kislota; h) γ -metil- δ -etilenant kislota tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang.

4.



birikmalarni ratsional va sistematik nomenklaturalarga binoan nomlang.

5. a) 2,3-dimetiloktan kislota; b) 5-metil-3-geksen kislota; d) 5-n-butyl-7-oktan kislota, e) dietilvinilsirka kislota; f) 2,3,4,5-tetrametilheptan kislota; g) allilikkilamchibutyl sirka kislota; h) olein [(Z)-9-oktadetsen] kislota, i) elaidin [(E)-9-oktadetsen] kislota; j) siskroton (2-buten) kislota; k) trans-kroton [2-buten] kislota; l) 1-dodekankarbon kislota; m) 2,4-dimetil-1-nonankarbon kislota tuzilish formulalarini yozing.

6. a) $C_5H_{10}O_2$, b) $C_6H_{12}O_2$ tarkibli izomer karbon kislotalarning tuzilish formulalarini yozing. Ularni ratsional va sistematik nomenklaturalarga binoan nomlang.

7. a) $C_4H_8O_2$, b) $C_5H_{10}O_2$ tarkibli izomer to'yinmagan karbon kislotalarning tuzilish formulalarini yozing. Ularni sistematik nomenklaturaga binoan nomlang.

8. a) 2,3-dimetil-2-etil pentan kislota; b) 2-metil-2-etil-3-penten kislota; d) 2,3-dimetil-2-izopropil-3-buten kislotalar stereoizomerlarining proyeksiya formulalarini yozing. Xiral markazlarning konfiguratsiyalarini (R yoki S) aniqlang.

9. Tarkibida fenil radikali saqlab, 10 ta vodorodi bo'lgan organik kislotalarning mumkin bo'lgan formulalaridan birini yozing.

10. Asosiy zanjirida oltita uglerod atomi saqlagan $C_7H_{14}O_2$ tarkibli barcha to'yingan monokarbon kislotalarning formulalarini yozib sistematik nomenklatura bo'yicha nomlang.

11. Kislorod saqlagan A moddaning suvli eritmasi kislotali muhit beradi. U bromli suvni rangsizlantirib, spirtlar bilan suvda erimaydigan suyuqmodda hosil qiladi. A moddaning eng sodda formulasini yozib, barcha reaksiyalarning tenglamalarini keltiring.

12. $C_5H_8O_2$ tarkibli A modda kaliy gidrokarbonatning to'yingan eritmasi bilan ta'sirlashganda gaz ajralsa, uning mumkin bo'lgan tuzilish formulalaridan birini yozing. A modda bromli suvni rangsizlantirib, nikel katalizatori ishtirokida vodorodni biriktirib $C_5H_{10}O_2$ tarkibli moddaga aylanadi. Tegishli reaksiyalarning tenglamalarini yozing.

13. A uglevodorod oksidlanganda A moddaning miqdori ikki baravar ko'p bo'lgan B modda hosil bo'ladi. B modda magniy bilan ta'sirlashganda C modda hosil bo'lib vodorod ajraladi. A, B, C moddalarning formulalarini ko'rsating. Tegishli reaksiyalarning tenglamalarini yozing.

14. Suvda kam eriydigan, alanga rangini sariq rangga bo'yaydigan, qattiq oq modda turmushda keng ishlatiladi. A moddaning suvli eritmasi xlorid kislota bilan ishlov berilganda B modda cho'kmaga tushib, kalsiy bromid eritmasi bilan ishlov berilsa C cho'kma hosil bo'ladi. A, B, C moddalarning formulalarini yozib, tegishli reaksiyalarning tenglamalarini keltiring.

15. 1 mol organik kislota 1 mol bromni biriktiradi. Shu kislotalarning ma'lum miqdori to'liq yonganda 15,84 g karbonat anhidrid

va 6,12 g suv hosil bo'ldi. Kislotaning mumkin bo'lgan formulasini toping.

16. Bir xil sondagi uglerod atomlari saqlagan to'yingan kislota bilan bir atomli spirtning teng miqdor-dagi aralashmasi mo'l natriy gidrokarbonat bilan ishlov berilganda shu aralashma yondirilganda ajraladigan karbonat angidrididan 6 baravar kam hajmdagi karbonat angidrid ajraladi. Aralashmada qaysi moddalar bor? Gazlarning hajmlari bir xil sharoitda o'lchangan?

17. Kislorod saqlagan A moddaning suvli eritmasi kislotali muhit beradi. U bromli suvni rangsizlantirib, spirtlar bilan suvda erimaydigan suyuq modda hosil qiladi. A moddaning eng sodda formulasini yozib, barcha reaksiyalarning tenglamalarini keltiring.

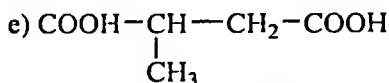
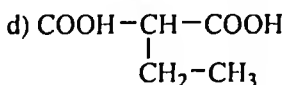
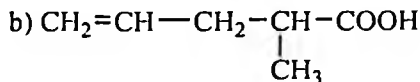
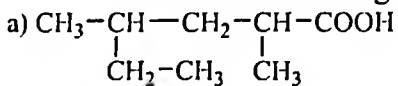
18. Quyidagi kislotalarning tuzilish formulasini yozing: a) propion; b) moy; d) α -metilmoy; e) valerian; f) α,β -dimetilvalerian; g) kapron; h) δ -metil- γ -etil- kapron. Ularni xalqaro nomlanishda nomlang. Mumkin bo'lgan hollarda ratsional nomini keltiring.

19. a) dimetilpropan; b) 3-metilbutan; d) 4-metil-2-etilpentan; e) 2,2,3-trimetilbutan; d) 3,5-dimetil-4-etilgeksan. Kislotalarning tuzilish formulasini keltiring. Ularga boshqa nomlar ham bering.

20. $C_5H_{10}O_2$ tarkibli hamma kislota izomerlarining tuzilish formulalarini yozing. Ularni nomlang. Xiral markazi bo'lgan kislotalarga S va R - enanaomerlarning uch o'lchamlik formulasini keltiring.

21. Quyidagi kislotalar qanday tuzilishga ega: a) akril; b) kroton; d) vinilsirka; e) oksalat; f) malon; g) qahrabo; h) adipin. Ularni xalqaro nomlanishda nomlang. Qaysi kislotalar uchun -sis va trans - izomerlar mavjud?

22. Birikmalarni nomlang:



23. $C_4H_6O_2$ tarkibli hamma to'yinmagan va $C_5H_8O_4$ tarkibli dikarbon kislotalarning izomerlari tuzilishini yozing. Ularni nomlang.

24. Qanday atom gruppalariga kislota qoldig'i yoki atsil deyiladi? Quyidagi kislotalarga xos atsilarni keltiring: a) chumoli; b) sirkab) propion; d) moy. Ularni nomlang.

25. Chumoli kislota molekulasining atom-orbital modelini tasvirlang. Kimyoviy bog'larni va karbonil hamda Hidroksil gruppalarining o'zaro ta'sirlashuvini xarakterlang. Karboksil gruppadagi karbonil hamda gidroksil gruppalarining, shuningdek chumoli aldegididagi va metil spirtidagi tegishli gruppalarining farqi nimada? UB-spektrda 204 nm. da yutilish spektrining paydo bo'lishi qanday elektronning o'tishiga bog'liq.

26. Molekulyar massaning krioskopik usulda aniqlanishi va reagent tuzilishini o'rganish, sirka kislota dimerlar ko'rinishda suyuq va kristall holatda bo'lishini ko'rsatdi. Buni qanday izohlash mumkin?

27. Nima sababdan: a) sirka kislota etil spirtidan yuqori haroratda qaynaydi; b) kislotalarning quyi vakillari suvda yaxshi eriydi; d) oksalat kislotaning suyuqlanish harorati sirka kislotanikidan yuqori; e) quyi molekulyar bir asoslik karbon kislotalari kabi ikki asoslik dikarbon kislotalar noxush hidlik emas.

28. Quyidagi kislotalarda karboksil gruppaning uglevodorod qoldig'iga induktiv va izomer ta'sirini ta'riflang: a) propion; b) akril; d) vinilsirka; e) malon; f) qahrabo. Radikaldagi reaksiyaga eng oson kirishadigan vodorodni ko'rsating va I-elektron zichligining taqsimotini kasriy zaryadlar ko'rinishida tasvirlang.

29. Karbon kislotaning RCOOH suvda erishidan sodir bo'ladigan teng muvozanat sxemasini tasvirlang. Qanday konstanta kislota quvvatining mikdoriy o'lchami bo'ladi (uning kislotaliligi)? Qo'pchilik karbon kislotalarning K_a kislotalik konstantasi ko'pincha qanday tartibga ega? Kislotaning pK_a si nima? Karbon kislotalar va spirtlarning kislotaliligini solishtiring. Hosil bo'lgan farqni tushuntiring.

30. RCOOH karbon kislota va uning anioni RCOO⁻ ning tuzilishini solishtiring. Nima sababdan kislotaldagi C-O bog'lar uzunligi farqli bo'lib, karboksilat aniondagi C-O bog'lar uzunligi bir xil? Nega kislotalarning kuchi uning anionlarining barqarorligi bilan o'lchanadi?

31. Quyidagi qatorlarda kislotalikning o'zgarishini tushuntiring:

a) $\text{HCOOH} > \text{CH}_3\text{COOH} > \text{CH}_3\text{CH}_2\text{COOH}$;

b) $\text{CH}_3\text{COOH} < \text{ClCH}_2\text{COOH} < \text{Cl}_3\text{CCOOH}$;

d) $\text{CH}_3\text{CH}_2\text{COOH} < \text{BrCH}_2\text{CH}_2\text{COOH} < \text{CH}_3\text{CHBrCOOH}$;
e) $\text{CH}_3\text{COOH} < \text{ClCH}_2\text{COOH} < \text{O}_2\text{NCH}_2\text{COOH}$.

32. Har bir juftlarning qaysi birida kislota nisbatan kuchliroq, sababini tushuntiring: a) chumoli va sirka; b) sirka va trimetilsirka; d) α -xlormoy va β -xlormoy; g) propion va akril; d) chumoli va oksalat; e) oksalat va malon?

33. Karboksil grupp atomlarining tebranishidan hosil bo'lgan yutilish chiziqlari IQ-spektrining qaysi oblastida bo'ladi. IQ-spektrga qarab spirt va kislotalardagi OH gruppaning valent tebranishlarini farqlash mumkinmi? Keton va kislotalardagi karbonil gruppalarini farqlash mumkinmi? Keton va kislotalardagi karbonil gruppalarini farqlash mumkinmi?

34. Quyidagi usullar yordamida tegishli moddalar ta'sirida izomoy kislota olish sxemalarini keltiring:

a) spirtni oksidlab; b) nitrilni gidrolizlab; d) Grinyar reaksiyasi bilan; e) malon efirni alkilab.

35. Quyidagi birikmalardan propion kislotani hosil qiling: a) propanol-1; b) tropen; d) etilbromid; e) pentanon-3; f) malon efir.

36. Etilen va anorganik reagentlardan qanday qilib quyidagi kislotalarni olish mumkin: a) sirka; b) propion; d) moy; e) qahrabo?

37. Propilendan quyidagi kislotalarni olish sxemasini yozing: a) sirka; b) propion; d) vinilsirka; e) moy; f) izomoy (ikki usulda); g) izovalerian (ikki usulda); h) akril.

38. Atsetilen va anorganik reagentlardan qanday qilib quyidagi kislotalarni sintez qilish mumkin:

a) sirka; b) kroton; d) moy?

39. Malon efirdan quyidagi kislotalarni olish yo'llarini ko'rsating: a) moy; b) 2-metilbutan; d) qahrabo; e) allilsirka.

40. Propion kislotadan uning quyidagi hosilalarini olish sxemalarini keltiring:

a) natriy tuzi; b) kalsiy tuzi; d) xlor angidridi; e) amidli; f) nitrilli; g) angidrid; h) etilefiri.

41. IQ-spektrda 2700 2500 sm dan keng yutilish chizig'i yeradigan, natriy biosulfat bilan reaksiyaga kirishib, suvli eritmasidan azsimon modda ajralib chiqadigan $\text{C}_3\text{H}_6\text{O}_2$ tarkibli birikma qanday tuzilishga ega?

42. Quyidagi hosilalarga ega bo'lgan $\text{C}_4\text{H}_8\text{O}_2$ tarkibli birikmaning tuzilishini aniqlang: a) natriy karbonatning suvdagi eritmasi bilan reaksiyaga kirishib, gazsimon modda ajraladi; b) o'yuvchi ishqor bilan suyultirilishidan propan kislota hosiladi; d) $\text{Ca}(\text{OH})_2$ bilan

$C_8H_{14}O_4Ca$ birikmasini hosil qilib, uning pirolizidan diizopropilketon hosil bo'ladi. Hamma ko'rsatilgan reaksiyalar sxemasini yozing.

43. $C_9H_{18}O_2$ moddasi natriy gidroksid bilan kizdirilishidan C_8H_{18} uglevodorodini hosil qiladi, bu uglevodorod trimetilsirka kislota tuzi elektrolizidan ham hosil bo'ladi. Boshlang'ich moddaning uzilishi qanday? Hamma o'zgarishlar sxemasini keltiring.

44. $C_5H_{11}NO$ moddasi kislota yoki ishqorning suvdagi eritmasida xona haroratida o'zgar olmaydi. Agar kislota suvdagi eritmasi bilan qizdirilsa, $C_5H_{10}O_2$ tarkibli modda hosil bo'lib, uning IQ-spektrining 2700 da 2500 sm oblastida keng yutilish chizig'i 1710 sm ingichka intensiv chiziq ko'rinadi. $C_5H_{10}O_2$ moddasiga ishqoriy muhitda brom ta'siridan n-butilamin hosil bo'ladi. $C_5H_{11}NO$ va $C_5H_{10}O_2$ birikmalari tuzilishini aniqlang.

45. Xlorid kislota ishtirokida gidrolizidan dimetilammoniy xlorid va $C_4H_8O_2$ birikmasini hosil qiladigan $C_6H_{13}NO$ birikmaning tuzilishini aniqlang. $C_4H_8O_2$ modda izobutil spirtning oksidlanishidan ham hosil bo'ladi.

46. Litiy alumogidridi bilan qaytarilishidan $C_4H_{11}N$ aminni hosil qiladigan, uning metillanishi va so'ngra parchalanishidan buten-1 to'rtlamchi ammoniy asosini hosil kiladigan C_4H_7N birikmasining tuzilishini aniqlang.

47. C_4H_7ClO birikmasi etilamin bilan qizdirilib $C_6H_{13}NO$ moddasi olinadi, u $LiAlH_4$ bilan qaytarilishidan etil-n-butilaminga aylanadi. Boshlang'ich va oraliq mahsulotlarni tuzilishini aniqlang.

48. Suvda erimaydigan, natriy karbonat bilan reaksiyaga kirishadigan kislotalik muhitda gidrolizlanib, suvda yaxshi eriydigan C_2H_6O va $C_2H_4O_2$ birikmalarini hosil qiladigan $C_4H_8O_2$ birikmaning tuzilishini aniqlang.

49. $C_4H_6O_2$ birikmasi ozonolizidan chumoli aldegid va pirouzum kislota hosil bo'ladi? Boshlang'ich moddaning tuzilishini aniqlang.

50. $C_6H_8O_4$ modda bromli suvni rangsizlantiradi, ozonolizidan faqat pirouzum kislota hosil qiladi, qizdirilganda suv chiqarib. $C_6H_6O_3$ birikmasini hosil qiladi? Boshlang'ich moddaning tuzilishini aniqlang.

51. To'yingan bir asosli karbon kislotalarining umumiy kimyoviy xossalari xarakterlang. Sirka kislota va sirka aldegid kimyoviy xossalari asoslangan holda ularning bir-biridan keskin farqlanishini izohlang.

52. Propion kislotaning keltirilgan reagentlar bilan reaksiya tenglamasini yozing:

a) Zn; b) NaOH; d) NaHCO₃; e) NH₄OH; f) Ca(OH)₂; g) CH₃MgI.

Bu reaksiyalarda propion kislotaning qanday xossasi Bu namoyon bo'ladi? Hosil bo'lgan birikmalarni nomlang. Bu reaksiyalarning qaysi biridan organik birikmada karboksil gruppasi borligini aniqlashda foydalaniladi?

53. Propion kislotaning sulfat kislotasi ishtirokida metil spirt bilan efir hosil qilish sxemasini yozing. Reaksiya mexanizmini keltiring va uning yordamida quyidagi faktlarni tushuntiring: a) mineral kislotasiz bu reaksiya deyarli amalga oshmaydi; b) sulfat kislotasi konsentratsiyasining ortishi efir hosil bo'lish tezligini kamaytiradi; v) nishonlangan metanol C₁₃¹⁸OH ishlatilganda, efirda kislorod izotopi qoladi; g) suv ko'shilganda efir unumi kamayadi.

54. Ekvimolekulyar miqdor sirka kislotasi va etil spirti sulfat kislotasi ishtirokida reaksiyaga kirishishidan, boshlang'ich va oxirgi mahsulotlar orasida muvozanat hosil bo'lib, unda 0,66 mol etilatsetat bo'ladi. Murakkab efir unumini qanday oshirish mumkin?

55. Etilpropionatning kislotalik va ishqoriy gidrolizi mexanizmini hamda sxemasini keltiring. Nima sababdan, ishqor murakkab efirlarning gidrolizida katalizatorlik qilib, uning hosil bo'lishida ishtirok etmaydi?

56. Etilatsetatning metanol ta'sirida pereeterifikatsiyasi reaksiyasini yozing. Kislotalik (H₂SO₄) va asoslik (CH₃ONa) kataliz sharoiti va mexanizmini keltiring.

57. Nima sababdan uchlamchi-butilatsetatning metanol bilan pereeterifikatsiyasi sulfat kislotasi ishtirokida asosan metil-uchlamchi-butil efiri hosil bo'lish bilan borib, ishqor ishtirokida bu efir hosil bo'lmaydi?

58. Natriy atsetatning sirka kislotasi xlorangidridi bilan sirka angidridi hosil qiladigan reaksiyasining mexanizmi va sxemasini yozing. Sirka angidridi propil spirti bilan qizdirilishidan qanday birikma hosil bo'ladi? Bu o'zgarishning sxemasi va mexanizmini keltiring.

59. Moy kislotaning quyidagi hosilalari gidroliz sxemasini yozing: a) xlorangidrid; b) angidrid; d) murakkab efir; e) amid. Bu jarayonda kislotasi va asoslarning katalitik ta'sirini tushuntiring.

60. Quyidagi birikmalarning asoslik va kislotalik xossalarini solishtiring: a) etilamin; b) atsetamid; b) N,N-dimetilatsetamid. Mavjud farqlarga izoh bering. Yuqorida keltirilgan birikmalarning HCl efirida va NaNH_2 (suyuq) NH_3 da o'zaro ta'sir reaksiyalarini yozing.

61. Quyidagi kislotalarning termik dekarboksillanishidan qanday birikmalar olinadi: a) nitrosirka; b) siansirka; d) malon? Bunday yengil o'tadigan reaksiyalarning mexanizmi qanday bo'ladi?

62. Nima sababdan, moy kislota kabi karbon kislotalarning (fosfor ishtirokida) bromlanishidan asosan α -holatdagi uglevodorodlari almashinadi?

63. Optik faol metiletilsirkislotada vaqt o'tishi bilan ratsematlanish sodir bo'ladi. Bu hodisani qanday tushuntirish mumkin.

64. Qaxrabo kislotasiga quyidagi reagentlar ta'sir ettirib qanday birikmalar olish mumkin:

a) Na_2CO_3 , b) PCl_5 , d) $\text{CH}_3\text{CH}_2\text{OH}$ [H^+]; e) $\text{Br}_2(\text{P})$?

65. Oksalat, qahrabo, glutar va adipin kislotalarning qizdirishga munosabatini solishtiring. Reaksiya sxemalarini yozing. Hosilalarni nomlang.

66. Malon kislotaning dietil efiri tuzilishini ko'ring. Nima uchun u CH kislota deb nomlanishini tushuntiring. Bu efirga quyidagi reagentlar ta'siridan qanday reaksiyalar sodir bo'ladi:

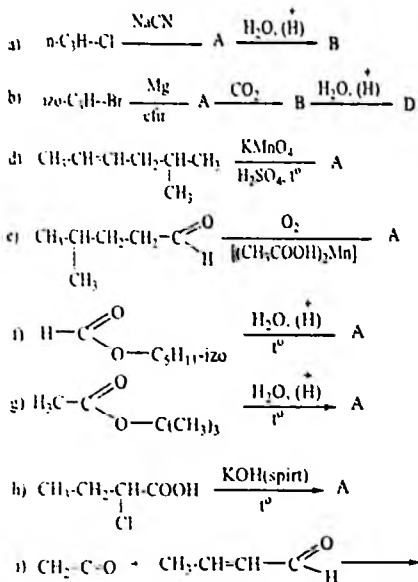
a) $\text{CH}_3\text{CH}_2\text{ONa}$ spirtida; b) NaNH_2 , NH_3 (suyuq) da;
d) CH_3CHO , $[(\text{C}_2\text{H}_5)_3\text{N}]$; e) Br_2 ; f) H_2O [H^+], t?

67. a) izomoy kislota b) 3-metilgeksan kislota d) 2-metilbutan kislota; e) trimetilsirka kislota olish uchun qanday spirt va aldegidlarni oksidlash kerak?

68. Chumoli, sirka, izomoy, stearin, akril va metakril kislotalar sanoat miqyosida qanday olinadi? Tegishli reaksiyalar sxemalarini yozing.

69. Uch xil usul bilan a) spirtidan; b) nitrildan; d) Grinyar reaksiyasi yordamida n-valerian kislota hosil qiling. Reaksiyalar tenglamalarini keltiring.

70. Grinyar reaksiyasidan foydalanib, a) n-moy kislota; b) izokapron kislota; d) trimetilsirka kislota;)2,3-dimetilgeptan kislotani sintez qiling.



reaksiyalar tenglamalarini oxirigacha yozing va hosil bo'lgan mahsulotlarni nomlang.

71. a) izobutilen \rightarrow trimetilsirka kislota; b) propilen \rightarrow vinilsirka kislota; d) etil spirt \rightarrow valerian kislota; e) propilen \rightarrow propion kislota sintezlarni bajaring.

Reaksiyalarning tenglamalarini yozing. Oraliq va oxirgi mahsulotlarni nomlang.

72. a) metan \rightarrow akril kislota; b) 2-buten \rightarrow 2-metil-2-buten kislota; d) propan \rightarrow 5-geksin kislota sintezlarni bajaring.

Reaksiyalarning tenglamalarini yozing. Oraliq va oxirgi mahsulotlarni nomlang.

73. Propan va boshqa reagentlardan foydalanib: a) sirka kislota; b) moy kislotani sintezlash reaksiyalari tenglamalarini yozing.

74. a) tristearin; b) propannitril (etilsianid), d) moy kislotaning butil efiri; e) sirka kislotaning propil efiri; f) linoleodiolein kislotali gidrolizlanganda qanday moddalar hosil bo'ladi?

75. a) linolenodiolein; b) linoleopalmitostearinni kislotali gidroliz qilinganda hosil bo'ladigan kislotalarning tuzilish formulasini yozing va ularni sistematik nomenklaturaga binoan nomlang.

76. Karbon kislotalar oz miqdordagi fosfor ishtirokida xlor yoki brom bilan reaksiyaga oson kirishadi. Bunda karboksilga nisbatan α -holatda joylashgan uglerod bilan bog'langan vodorod atomi galogenga

almashinadi (Gel-Folgard-Zelinskiy reaksiyasi). Shu usul bilan a) α -brom sirka kislota; b) α,α -dibrompropion kislota; d) α -xlorizomoy kislota; e) tribromsirka kislota hosil qiling.

77. a) laurin kislota ($n\text{-C}_{11}\text{H}_{23}\text{COOH}$); b) palmitin kislota ($n\text{-C}_{15}\text{H}_{31}\text{COOH}$) litilyuminiygidrid bilan qaytarilganda hosil bo'ladigan spirtlarni nomlang.

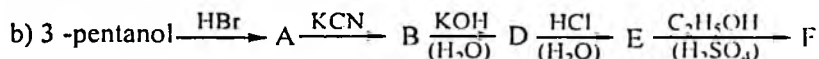
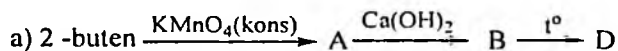
78. Sirka kislota bilan a) SOCl_2 ; b) PCl_5 ; d) PBr_3 ; e) n-propil spirt (konsentrlangan H_2SO_4 ishtirokida); f) CaO orasida boradigan reaksiyalar tenglamalarini yozing. Hosil bo'ladigan birikmalarni nomlang.

79. Atsetilen va boshqa reagentlardan foydalanib. polimetilakrilatni sintezi reaksiyalari sxemalarini keltiring.

80. Atseton va boshqa reagentlardan foydalanib. polimetilmetakrilatni sintez qiling. Polimetilakrilat va polimetilmetakrilat qayerlarda ishlatiladi?

81. Olein kislota a) katalizator ishtirokida vodorod; b) bromli suv; d) ishqoriy muhitda kaliy permanganatning suvdagi suyultirilgan eritmasi; e) kaliy permanganatning 8% li eritmasi (qizdirish bilan); f) ozonni ta'sir ettirish va ozonidni parchalash reaksiyalari tenglamalarini yozing. Raksiyalarda hosil bo'ladigan oxirgi mahsulotlarning nomini ayting.

82.



sxemalarda keltirilgan aylanishlarni amalga oshiring. Oraliq va oxirgi mahsulotlarni nomini ayting.

83. $\text{C}_7\text{H}_{14}\text{O}_2$ tarkibli kislota $\text{C}_6\text{H}_{14}\text{O}$ tarkibli moddadan olinishi mumkin. $\text{C}_6\text{H}_{14}\text{O}$ modda natriy bilan reaksiyaga kirishadi. oksidlanganida oraliq mahsulot sifatida $\text{C}_6\text{H}_{12}\text{O}$ tarkibli keton hosil bo'ladi. Bu ketonning oksidlanishidan esa asosan atseton va propion kislota olinadi. $\text{C}_7\text{H}_{14}\text{O}_2$ tarkibli kislota tuzilishini aniqlang.

84. a) izovalerian kislota b) 2,3-dimetil butan kislota qaysi birlamchi spirtlarni oksidlab olish mumkin?

85. Sirka kislota olishning uchtdan kam bo'lmagan reaksiyalari tenglamalarini yozing. Bu reaksiyalarning borish sharoitlarini ko'rsating.

86. Butandan sirka kislotani qanday olish mumkin?
87. 92 g etanolni oksidlab 70% li (zichligi 1,07 g/ml) bo'lgan sirka kislotaning qanday hajmini olish mumkin?
88. Brometandan qanday qilib propion kislota olish mumkin?
89. C_4H_8 tarkibiga ega izomer alkenlarga kuchli oksidlovchilar (masalan xromli aralashma) ta'sir ettirilganda qaysi moddalar hosil bo'ladi?
90. 1,56 g to'yingan aldegidga kumush oksidining ammiakdagi eritmasi ta'sir ettirilganda 4,68 g kumush ajraldi. Aralashma kislotali muhitga keltirilganda olinadigan kislotaning formulasini aniqlang. Shu kislotaning mumkin bo'lgan barcha izomerlarining formulalarini toping.
91. Natriy palmiat bilan sulfat kislotaning suvli eritmasi orasida boradigan reaksiya tenglamasini yozing.
92. Propion kislota angidridining gidrolizi tenglamasini yozing.
93. Quyidagi moddalardan qaysilari juft-juft bo'lib reaksiyaga kirisha oladi? Reaksiyalarning tenglamalarini yozib, borish sharoitlarini ko'rsating. Metanol, sirka kislota, natriy gidroksid, metan.
94. 6% li kaliy stearatning 150 g suvli eritmasi 100 ml 0,2 M li xlorid kislota eritmasi bilan ishlov berildi. Tushgan cho'kmaning massasini toping.
95. 50 g 6% li kaliy stearatga 20 g 1% li sulfat kislota eritmasi ta'sir ettirildi. Ajratib olingan filtratga natriy karbonat ta'sir ettirilsa gaz ajraladimi? Javobingizni hisoblash bilan tasdiqlang.
96. 1 g sirka kislota va 1 g chumoli kislotadan iborat aralashmani neytrallash uchun 10% li (zichligi 1,09 g/ml) kaliy gidroksid eritmasidan qanday hajm talab qilinadi?
97. 400 g chumoli kislota eritmasini kumush oksidining ammiakdagi eritmasi bilan oksidlanganda 8,64 g cho'kma tushdi. Boshlang'ich eritmadagi kislotaning massa ulushini toping.
98. 37 g noma'lum to'yingan bir asosli kislota natriy gidrokarbonatning suvli eritmasi bilan neytrallandi. Ajralgan gaz ohakli suv orqali o'tkazilganda 50 g cho'kma tushdi. Qaysi kislota olingan va necha l gaz ajraladi (n.sh.)?
99. Bir asosli organik kislotaning natriyli tuzi natriy gidroksid qo'shib suyuqlantirilganda 11,2 l (n.sh.) normal sharoitda zichligi 1,965 g/l bo'lgan gazsimon organik modda hosil bo'ldi. Necha gramm tuz reaksiyaga kirishgan va qaysi gaz hosil bo'lgan?

100. Izovalerian kislalani: a) birlamchi spirtni oksidlab; b) aldegidni oksidlab; v) alkilgalogeniddan; g) murakkab efirni gidroliz qilib; d) kislota angidridini gidroliz qilib; e) magniy organik birikma yordamida olish reaksiyalarining tenglamalarini keltiring.

101. Quyidagi moddalar orasida ta'sirlashuv borish-bormasligini ko'rsating:

a) chumoli kislota va xlor; b) propen kislota va xlor; d) akril kislota va kaliy permanganat; e) ammiak va sirka kislota;

102. 200 g chumoli va sirka kislotalar aralashmasining suvli eritmasini neytrallash uchun 382 ml 10% li kaliy gidroksid eritmasi (zichligi 1,1 g/ml) sarflandi. Neytral eritma bug'latilgach 68.6 g cho'kma hosil bo'ldi. Boshlang'ich eritmadagi moddalarning massa ulushlarini toping.

103. 13,8 g etil spirti bilan bir asosli organik kislota aralashmasiga natriy ta'sir ettirilganda 3,36 l (n.sh.) gaz ajralib. Shu aralashmaga natriy gidrokarbonatning to'yingan eritmasi ta'sir ettirilsa 1,12 l (n.sh.) gaz ajraladi. Organik kislota tuzilishini aniqlab, aralashmadagi moddalarning massa ulushlarini toping.

104. 16 g fenol va sirka kislota dietil efirdagi eritmasiga natriy metali ta'sir ettirilganda 493 ml (n.sh.) gaz ajraldi. Eritmaning shunday miqdoriga 5% li natriy gidrokarbonat eritmasi ta'sir ettirildi. Bunda 269 ml (n.sh.) gaz ajraldi. Eritmadagi moddalarning massa ulushlarini toping.

105. A modda yoqimli hidga ega. A modda gidrolizlanganda uglerod atomlari soni teng bo'lgan ikki modda hosil bo'ladi. Ulardan biri B modda sun'iy tola olishda keng ishlatiladi. B modda nur ishtirokida xlor bilan ta'sirlashib kuchi har xil bo'lgan ikki kislota hosil qiladi. C kislota kuchsiz kislota sanaladi. Tegishli reaksiyalarning tenglamalarini yozing.

106. Uchta probirkada uchta suvli eritma: chumoli kislota, etanol va xlorid kislota eritmaları bor. Ularning fizikaviy va kimyoviy xossalari asoslanib qaysi probirkada qaysi modda borligini qanday aniqlash mumkin? Reaksiyalarning tenglamalarini yozing.

107. 12% li sirka kislota, 16,8% li natriy gidrokarbonat va 18,9% li xlorirka kislotalar eritmalarining teng massalari aralashtirildi. Eritma quriguncha bug'latildi. Qoldiqning tarkibini toping.

108. 26,6 g sirka kislota, sirka aldegid va etanolning aralashmasini neytrallash uchun 44,8 g 25% li kaliy gidroksid eritmasi sarflandi. Aralashmaning shunday miqdoriga mo'l natriy ta'sir

ettirilganda 3,36 l (n.sh.) gaz ajraldi. Dastlabki aralashmadagi moddalarning massa ulushlarini toping.

109. 25 g sirka kislota suvda eritilib, eritmaning hajmi 1 l ga yetkazildi. Sirka kislotaning dissotsilanish konstantasi $1,8 \cdot 10^{-5}$ bo'lsa, eritmadagi H^+ ionlarining konsentratsiyasini toping. Dissotsilanganda sirka kislota konsentratsiyasining o'zgarishini hisobga olmag.

110. Propil spirti va propion kislotalar aralashmasini neytrallash uchun 104 g 0,5 M li (zichligi 1,04 g/ml) natriy gidrokarbonat eritmasi sarflandi. Bunda ajralgan gaz boshlang'ich aralashma yondirilganda ajraladigan gazdan 18 marta kam hajmni egallasa, boshlang'ich aralashmadagi moddalarning massa ulushlarini toping.

111. 80% unum bilan 9,76 g $C_7H_6O_2$ tarkibli modda hosil bo'lishi uchun necha gramm C_8H_{10} tarkibli aromatik uglevodorodni kislotali muhitda kaliy permanganat eritmasi bilan oksidlash kerak? Boshlang'ich aromatik uglevodorodning tuzilishini va oksidlanish mahsulotlarini toping. Reaksiyalarning tenglamalarini yozing.

112. 25,8 g etil spirti va sirka kislota aralashmasi konsentrlangan sulfat kislota qo'shib qizdirilganda 14,08 g murakkab efir hosil bo'ldi. Spirt va kislota aralashmasining shunday miqdori yondirilganda 23,4 ml suv olindi. Boshlang'ich aralashmadagi moddalarning massa ulushlarini va eterifikatsiya reaksiyasining unumini toping.

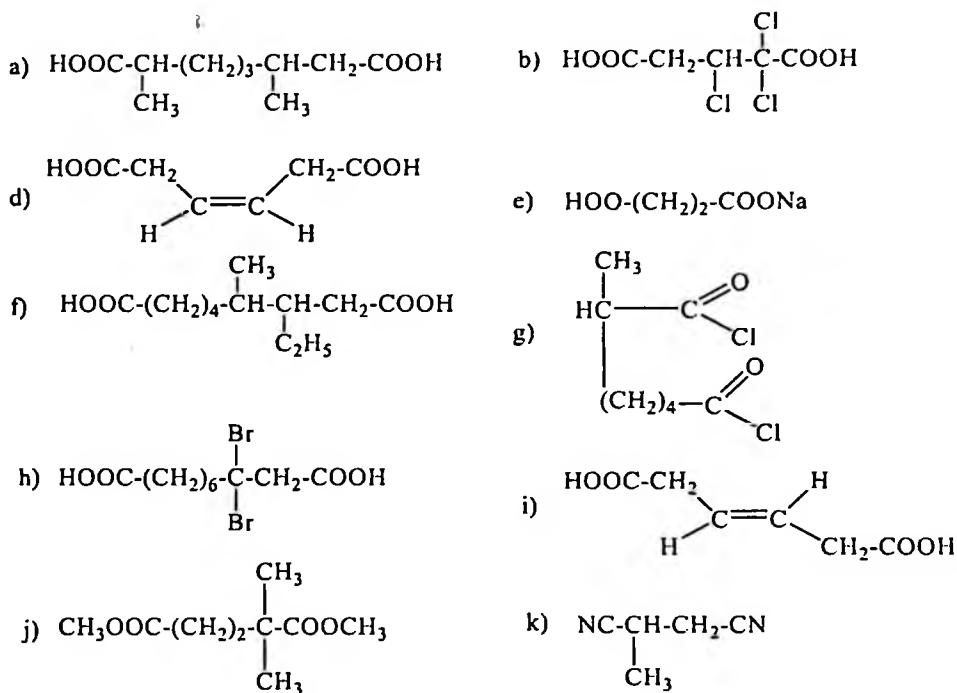
113. Xlor sirka kislota olish uchun 75 g sirka kislota sarflandi. Reaksiya 100% unum bilan borgan bo'lsa, reaksiya mahsulotlarini neytrallash uchun kalsiy gidroksidning to'yingan eritmasidan necha gramm talab qilinadi? Kalsiy gidroksidning 100 g suvdagi eruvchanligi 0,165 g ga teng.

114. Bir asosli karbon kislotaning natriyli tuzi eritmasi elektroliz qilinganda anodda geliyga nisbatan zichligi 12,17 bo'lgan gazlar aralashmasi hosil bo'ldi. Noma'lum tuzni aniqlab, elektroliz reaksiyasining tenglamasini yozing.

115. Natriymalon efirining elektron tuzilishini tushuntiring. Uning mukammal strukturalarini va mezoformulasini keltiring.

116. a) malon kislota; b) dimetilmalon kislota; d) etilqahrabo kislota; e) glutar kislota; f) adipin kislota; g) α -metilglutar kislota; h) α,α' -dibromadipin kislota; i) pimelin kislota; j) β,β' -dimetilpimelin kislota; k) po'kak kislota; l) α,γ -dixlorpo'kak kislota; m) metilmalein kislota; n) azelain kislota; o) sebatsin kislotaning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang.

117.



birikmalarni nomlang.

118. a) β -metiladipin kislota; b) γ -xlorpo'kak kislota; d) β -etilglutar kislota; e) β,β' -dibromazelain kislolaning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang.

119. $\text{C}_5\text{H}_8\text{O}_4$ tarkibli izomer dikarbon kislotalarning tuzilish formulalarini yozing. Ularni ratsional va sistematik nomenklaturaga binoan nomlang.

120. $\text{C}_4\text{H}_4\text{O}_4$ tarkibli izomer to'yinmagan dikarbon kislotalarning tuzilish formulalarini yozing va ularni nomlang.

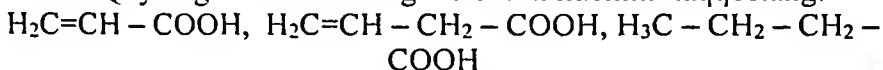
121. Birining optik izomeri bor va ikkinchisida esa optik izomeri bo'lmaydigan ikkita ikki asosli kislotalarning formulalarini yozing.

122. Oksalat kislolaning ikkita eng yaqin gomologlarining formulalarini yozib, ularni nomlang. Shu uch dikarbon kislotalardan qaysi birining kislotalik xossalari kuchli bo'ladi?

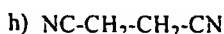
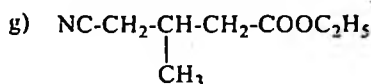
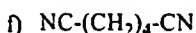
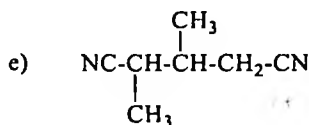
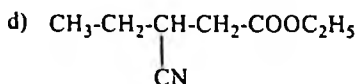
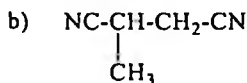
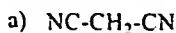
123. $\text{C}_4\text{H}_4\text{O}_4$ tarkibli moddani gidrogenlaganda qahrabo kislota, qizdirganda esa bromli suv va kaliy permanganatning suvdagi

eritmasini rangsizlantiradigan $C_4H_2O_3$ birikma hosil bo'ladi. $C_4H_4O_4$ ning tuzilishini aniqlang.

124. Quyidagi birikmalarning kislotalik kuchini taqqoslang:



125. Quyidagi birikmalar gidroliz qilinganda qanday dikarbon kislotalar hosil bo'ladi?



126. a) β -oksimoy aldegid; b) 3-oksi-2-metilpentanal; d) 2,3-dimetil-1,4-butandiol; e) 1,5-pentandiol; f) 3-gidroksibutan kislota; g) β -oksiizovalerian kislota; h) 3,3-dimetil-1,4-pentadiyen; i) 3,4,4-trimetil-1,6-heptadiyenni oksidlaganda hosil bo'ladigan dikarbon kislotalarni sistematik nomenklaturaga binoan nomlang.

127. Shovul, malon, qahrabo, adipin va malein kislotalar qanday usullar bilan olinadi? Ular qanday amaliy ahamiyatga ega?

128. Quyidagi sintezlar sxemalarini tuzing:

a) atsetilen \rightarrow qahrabo kislota

b) atsetilen \rightarrow etilqahrabo kislota;

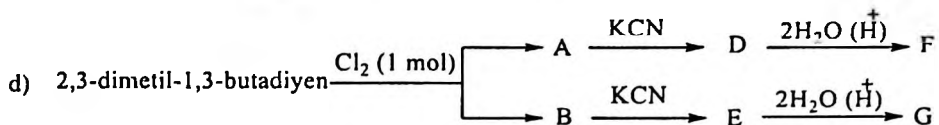
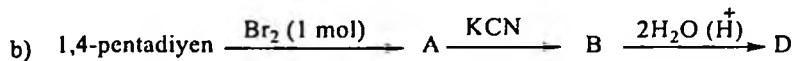
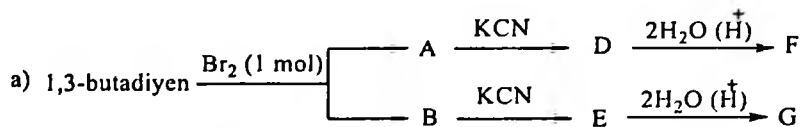
d) 3-metil-1-buten \rightarrow izopropilqahrabo kislota

e) propilen \rightarrow metilqahrabo kislota

f) n-butan \rightarrow adipin kislota

129. Sirka kislota hamda boshqa reagentlardan foydalanib, a) malon kislota; b) malon kislota ning dietil efiri (malon efir) ni sintez qiling.

130. Quyidagi aylanishlarni amalga oshiring:



131. Bu reaksiyalarning oxirgi mahsulotlarini nomlang va ularning qaysilari geometrik izomerlar holida uchrashini ko'rsating?

132. Butil spirtidan pentan kislota oling va uning kislota xloridi va amidining hosil bo'lish tenglamalarini yozing.

133. Malon efirdan foydalanib, 3-metilbutan va 2,3-dimetilpentan kislotalari oling. Ushbu kislotalar uchun ammiak bilan reaksiyani yozing va hosil bo'lgan birikmalarni qizdiring. Barcha reaksiyalarni yozing.

134. Tegishli to'yinmagan uglevodorodlardan oksosintez reaksiyasidan foydalanib, quyidagi kislotalarni oling: a) 2,3-dimetilpentan, b) 3-metilpentan, c) 2,4-dimetilgeksan. Ko'rsatilganlar bilan birga olinadigan kislotalarning tuzilishi uchun formulalarni yozing.

135. Metilpropan kislota uchun angidrid va kislota xlorid hosil bo'lishining reaksiya tenglamalarini barcha usullar bilan yozing.

136. Butil spirtidan butiril xlorid oling va uning natriy asetat bilan reaksiyasi tenglamasini yozing.

137. Izopentil spirtining propion angidrid, atsetilxlorid, butil butirat bilan reaksiya tenglamalarini yozing.

138. $\text{H}_2\text{C}=\text{CH}-\text{CH}_2-\text{COOC}_2\text{H}_5$ tarkibli murakkab efirga oz miqdorda kuchli asos ta'sir ettirilganda qanday birikma hosil bo'ladi?

139. 1-oleil-2-palmitil-3-stearoilglitserinni o'yuvchi natriy ishtirokida gidrolizlanish sxemasini yozing. Reaksiya mahsulotlarini nomlang.

140. Malein kislota bilan quyidagi birikmalar orasida boradigan reaksiyalar tenglamalarini yozing. Hosil bo'ladigan birikmalarni nomlang:

141. a) vodorod bromid; b) vodorod; d) brom; e) kaliy permanganatning suyultirilgan eritmasi bilan oksidlash.

142. a) sirka; b) malon; d) adipin e) oksalat kislotalarni kislota kuchining oshib borishi tartibida joylashtiring.

143. a) metilmalon; b) metiletilmalon; d) etilqahrabo; e) β -metilglutar;

f)
$$\text{HOOC}-(\text{CH}_2)_n-\text{COOH} \xrightarrow[t^\circ]{\text{P}_2\text{O}_5}$$
 dikarbon kislotalar qizdirilganda qanday birikmalar hosil bo'ladi?

144. Oksalat kislotaga: a) kaliy permanganatning suvdagi suyultirilgan eritmasi (suyultirilgan sulfat kislota ishtirokida qizdirilganda); b) konsentrlangan sulfat kislota (qizdirilganda); d) rux va sulfat kislota; e) magniy va sulfat kislota; f) (kons. H_2SO_4 ishtirokida) etilenglikol; g) ortiqcha fosfor pentaxlorid ta'sir ettirilganda boradigan reaksiyalarning tenglamalarini yozing. a-reaksiya qayerda ishlatiladi?

145.

a) oksalat kislota $\xrightarrow{2\text{C}_2\text{H}_5\text{OH} (\text{H}^+)}$ A $\xrightarrow{2\text{NH}_3}$ B $\xrightarrow{\text{P}_4\text{O}_{10}}$ D

b) malon kislota $\xrightarrow{2n-\text{C}_3\text{H}_7\text{OH} (\text{H}^+), t^\circ}$

d) qahrabo kislota $\xrightarrow{2\text{NaOH} (\text{suvli erit.})}$

e) malon kislota $\xrightarrow[\text{vakuumda qizdir.}]{\text{P}_2\text{O}_5}$ A $\begin{cases} \xrightarrow{\text{H}_2\text{O}} \text{B} \\ \xrightarrow{2\text{C}_2\text{H}_5\text{OH}} \text{D} \end{cases}$

f) qahrabo kislota $\xrightarrow[220^\circ\text{C}]{\text{NH}_3}$ A $\begin{cases} \xrightarrow{\text{Na}} \text{B} \\ \xrightarrow{\text{Br}_2} \text{D} \end{cases}$

g) oksalat kislota $\xrightarrow{\text{NH}_3}$ A $\xrightarrow{t^\circ}$ B

h) malon kislota $\xrightarrow{\text{Br}_2}$

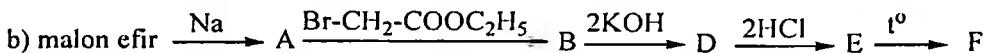
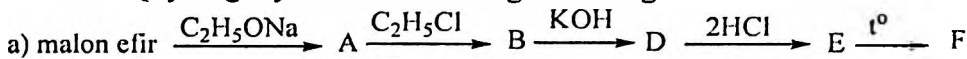
i) malon kislota $\xrightarrow[\text{asosli katalizator}]{\text{H}_3\text{C}-\text{C} \begin{matrix} \text{=O} \\ \text{<H} \end{matrix}}$

reaksiyalar tenglamalarini yozing. Oraliq va oirgi mahsulotlarni

nomlang.

146. Malein kislotaga: a) kaliy permanganatning suyultirilgan eritmasi; b) vodorod; d) brom; e) suv; f) vodorod bromidni ta'sir ettirganda va g) o'zini qizdirganda boradigan reaksiyalar tenglamalarini yozing. Hosil bo'ladigan birikmalarni nomlang.

147. Quyidagi aylanishlarni amalga oshiring:



148. Malon efir va boshqa reagentlarga foydalanib, a) izovalerian; b) geksan; d) 4-metilpentan; e) propion; f) metilizopropil sirka kislotalarni sintez qiling. Bu reaksiyalarning tenglamalarini yozing.

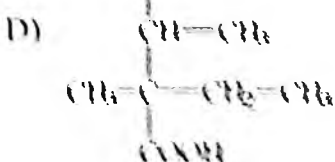
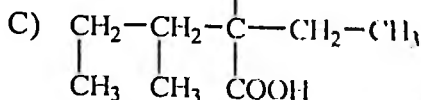
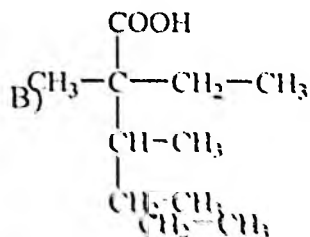
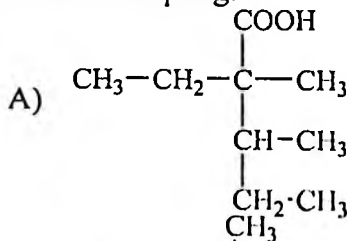
149. Malon efir va boshqa reagentlardan foydalanib, a) α, α' -dimetilqahrabo; b) adipin; d) α -metilglutar kislotalarni sintez qiling.

150. Malon efir va boshqa reagentlardan foydalanib, a) kroton; b) 3-metil-2-buten kislotalarni sintez qiling.

151. $C_6H_{10}O_4$ tarkibli kislota xossalariga ega bo'lgan birikma sulfat kislota ishtirokida etil spirit bilan reaksiyaga kirishib, $C_8H_{14}O_4$ birikmani, qizdirilganda esa CO_2 ni ajratib, kislota xossalarini namoyon qiladigan $C_3H_6O_2$ moddani hosil qiladi. $C_6H_{10}O_4$ birikmaning tuzilishini aniqlang?

Karbon kislotalar va ularning hosilalarining nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. (2R)-2,3-dimetil-2-etilpentan kislotaning proyeksiyon formulasini aniqlang.



8. $C_4H_6O_2$ tarkibli modda ozonolizidan chumoli aldegid va pirouzum kislota $CH_3-CO-COOH$ hosil bo'ldi. $C_4H_6O_2$ modda tuzilishini aniqlang.

- A) vinilsirka kislota; B) kroton kislota;
C) izokroton kislota; D) metakril kislota.

9. $C_5H_{10}O_2$ tarkibli modda quyidagi xossalarga ega: a) natriy karbonatning suvdagi eritmasi bilan reaksiyaga kirishganda gazsimon modda ajraladi; b) ishqor qo'shib suyultirilganda izobutan hosil bo'ladi; B) kalsiyli tuzining pirolizidan diizobutilketon olinadi. $C_5H_{10}O_2$ moddaning nomini aniqlang.

- A) pentan kislota; B) 2-metilbutan kislota;
C) 3-metilbutan kislota; D) 2,2- dimetilpropan kislota.

10. Karbon kislotalar monomerleri IQ-spektrlarida karbonil guruhining valent tebranishlari qaysi sohada kuzatiladi?

- A) 2080-2100 cm^{-1} B) 1960-1980 cm^{-1}
C) 1800-1810 cm^{-1} D) 1750-1770 cm^{-1}

17, c. 45

11. Karbon kislotalar dimerleri IQ-spektrlarida karbonil guruhining valent tebranishlari qaysi sohada kuzatiladi?

- A) 2050- 2065 cm^{-1} B) 1875-1890 cm^{-1}
C) 1800-1810 cm^{-1} D) 1706-1720 cm^{-1}

17, c. 45

12. PMR- spektrlarda karboksil guruhi protonining kimyoviy siljish qiymati necha m.h. ga teng?

- A) 2-2,5 m.h; B) 4-5 m.h; C) 6-7 m.h; D) 10-13 m.h;

17, c. 45

13. Karbon kislotalar UB-spektrida λ_{maks} qaysi sohada yotadi?

- A) 280 nm B) 260 nm C) 230 nm D) 200 nm

8, c. 201

14. IQ-spektrlarda to'yingan karbon kislotalar dimerlarining karbonil guruhi tebranishlari qaysi sohada namoyon bo'ladi?

- A) 1680-1660 cm^{-1} B) 1650-1620 cm^{-1}
C) 1720-1700 cm^{-1} D) 1610-1590 cm^{-1}

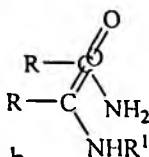
8, c. 200

15. Karbon kislotalar PMR-spektrlarida karboksil guruhining protoni qaysi maydonda signal beradi?

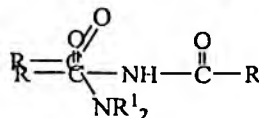
- A) δ 4-6 m.h. B) δ 10-13 m.h. C) δ 7-9 m.h. D) δ 15-18 m.h.
17, c. 79-80

16. Umumiy formulalardan qaysi biri ikkilamchi amidlarga tegishli?

A)



B)



C)

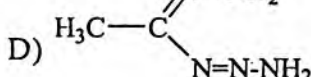
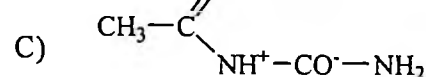
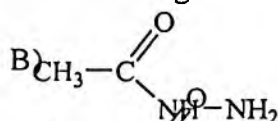
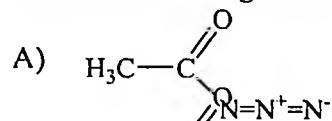
D)

4, 285-b.

17. C₅H₉N tarkibli nitrilning nechta strukturaviy izomeri bo'lishi mumkin?

- A) uchta; B) to'rtta; C) beshta; D) oltita;
6, 135- va 140-b.

18. Atsetilazidning tuzilish formulasini ko'rsating.



19, KH. 1, c. 184

19. Propanoilxloridni sintezlash uchun qaysi karbon kislotaga tionil xlorid ta'sir ettirish kerak?

- A) propion kislotaga; B) etan kislotaga;
C) moy kislotaga; D) butan kislotaga;

4, 268-b; 6, 132-b; 15, c. 562-563

20. Spirtlarning qaysi biri eterifikatsiya reaksiyasiga nisbatan eng oson kirishadi?

- A) 2-metilpropanol B) propanol-1
C) butanol-2 D) metanol

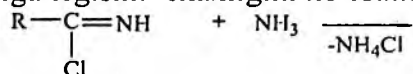
4, 267-268-b; 15, 575-b.

21. Karbon kislotalardan qaysi biri eterifikatsiya reaksiyasiga nisbatan eng qiyin kirishadi?

- A) chumoli kislotasi B) sirka kislotasi
C) trimetilsirka kislotasi D) dimetilsirka kislotasi

4, 267-268-b; 15, 575-b.

22. Reaksiya mahsuloti karbon kislotalar hosilalarining qaysi sinfiga tegishli ekanligini ko'rsating.

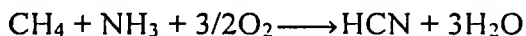


imidxlorid

- A) amidlarga B) imidlarga C) amidinlarga
D) gidrazidlarga

19, KH. 1, c. 184

23. Chumoli kislota nitrili (sianid kislota) sanoatda metan va ammiak aralashmasini yetarli emas miqdordagi kislorod bilan piroliz qilib olinadi:



Bu kimning jarayoni deb yuritiladi?

- A) Adams B) Arbuzov C) Arndt D) Andrusov

24. Birikmalardan qaysi biri gidrolizlanish reaksiyasiga nisbatan eng oson kirishadi?

- A) $\text{CH}_3-\text{C}\equiv\text{N}$ B) $\text{CH}_3-\text{COOCH}_3$
C) $\text{CH}_3-\text{CONH}_2$ D) CH_3-COCl

19, KH. 1, c. 185

25. Karbon kislotalarning hosilalari uchun qanday reaksiyalar xos?

- A) A_N ; B) S_R ; C) S_N ; D) A_F :

15, c. 630-633

26. Gidroksam kislotalar Lyuis kislotalari, P_2O_5 yoki sirka anhidrid ishtirokida birlamchi aminlarga qayta guruhlanadi:



Bu kimning qayta guruhlanishi?

- A) C. Lang; B) V. Lossen;
C) L. Lorents; D) V. Latimer;

3, c. 592

27. Birikmalardan qaysi birining S_N reaksiyalarga kirishish qobiliyati nisbatan eng kuchli?

- A) CH_3-NH_2 B) $\text{CH}_3-\text{CH}_2-\text{NH}_2$
C) $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{NH}_2$ D) $\text{CH}_3-\text{CONH}_2$

15, c. 633-634

28. Sirka kislotalaning $\text{C}_5\text{H}_{10}\text{O}_2$ tarkibli hosilasi PMR-spektrida uchta signal (δ m.h.) 1,05 (dublet); 1,95 (singlet); 4,85 (multiplet):

intensivliklar nisbati 6 : 3 : 1. Moddaning tuzilishini aniqlang va uni nomlang.

- A) izopropilatsetat B) propilatsetat
 C) izobutilformiat D) n-butilformiat

17, c. 92

29. Dimetilmalein kislota nechta geometrik izomer holida uchrashi mumkin?

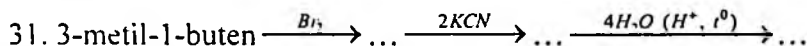
- A) beshta; B) to'rtta; C) uchta; D) ikkita.

4. 321-b.

30. $\text{HOOC}-(\text{CH}_2)_6-\text{COOH}$ tuzilishli dikarbon kislotaning tarixiy (trivial) nomini aniqlang?

- A) pimelin kislota; B) po'kak (suberin) kislota;
 C) azelain kislota; D) sebatsin kislota.

4, 298-b.



Reaksiyalar oxirgi mahsuloti nomini ko'rsating.

- A) etilglutar kislota; B) dimetilglutar kislota;
 C) izopropilqahrabo kislota; D) propilqahrabo kislota.

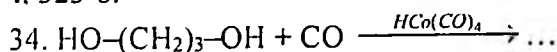
32. Dinitril hosil bo'lishi orqali β -etilglutar kislota olish uchun qanday dibromalkanni reaksiyaga kiritish kerak?

- A) $\text{Br}-\text{CH}_2-\underset{\text{CH}_2-\text{Br}}{\text{CH}}-\text{CH}_2-\text{CH}_3$
 B) $\text{Br}-\text{CH}_2-\underset{\text{CH}_3}{\text{CH}}-\text{CH}_2-\text{CH}_2-\text{Br}$
 C) $\text{Br}-\text{CH}_2-\underset{\text{CH}_3}{\text{CH}}-\underset{\text{Br}}{\text{CH}}-\text{CH}_3$
 D) $\text{Br}-\text{CH}_2-\underset{\text{Br}}{\text{CH}}-\underset{\text{CH}_3}{\text{CH}}-\text{CH}_3$

33. Sis-buten-2 ni katalizator ishtirokida kislorod bilan oksidlaganda qanday dikarbon kislota hosil bo'ladi?

- A) fumar kislota; B) qahrabo kislota;
 C) metilmalon kislota; D) malein kislota.

4. 323-b.



Reaksiya mahsulotini nomlang.

- A) malon kislota; B) metilmalon kislota;
 C) qahrabo kislota; D) glutar kislota.

3, c. 557; 4, 299-b.

35. Shovul kislota sanoatda qaysi moddadan olinadi?

- A) ditsiandan; B) natriy formiatdan;
C) etilendan; D) atsetilendan.

3, c. 558; 4, 303-b; 15, c. 861

36. Malon kislota sanoatda qaysi moddadan olinadi?

- A) natriy atsetatdan; B) propilendan;
C) metilatsetilendan; D) xlorsirka kislotalardan.

4, 303-b; 10, 1, c. 594; 15, c. 861

37. Kislotalardan qaysi biri nisbatan eng kuchli?

- A) sirka kislota; B) shovul kislota;
C) propion kislota; D) malon kislota.

3, c. 595; 4, 300-301-b.

38. Dikarbon kislotalardan qaysi biri nisbatan eng kuchsiz?

- A) shovul kislota; B) malon kislota;
C) qahrabo kislota; D) pimelin kislota.

3, c. 595; 4, 300-301-b.

39. Sirka kislota hosil qilish uchun dikarbon kislotalardan qaysi birini qizdirish kerak?

- A) shovul kislota; B) malon kislota;
C) qahrabo kislota; D) adipin kislota.

4, 301-302-b; 10, 1, c. 596; 15, c. 865

40. Shovul kislota odatdagi sharoitda qanday modda?

- A) hidsiz suyuqlik; B) sirka hidli suyuqlik;
C) rangsiz kristall modda; D) efir hidli moysimon suyuqlik.

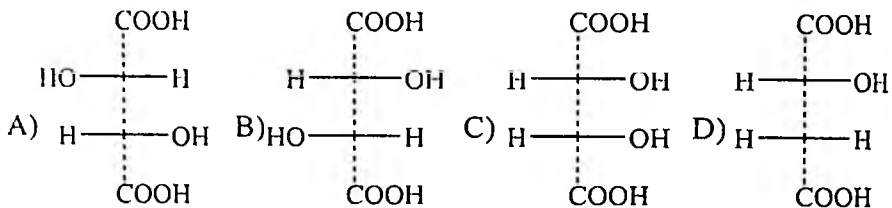
4, 302-b.

41. Adipin kislota qayerda ishlatiladi?

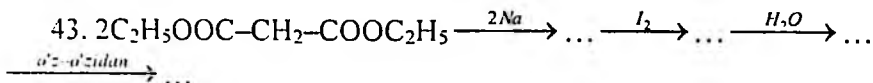
- A) naylon ishlab chiqarishda;
B) diyen sintezida;
C) karbon kislotalar sintezida;
D) lak va bo'yoqlar ishlab chiqarishda.

4, 309-b.

42. Malein kislotani kaliy permanganatning suyultirilgan eritmasi bilan qizdirilganda hosil bo'ladigan gidroksikislotaning tuzilishini aniqlang?



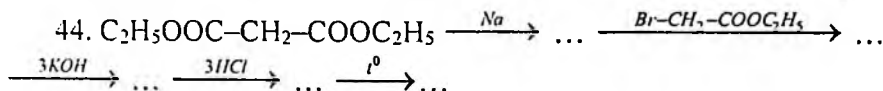
6. 154-b.



Reaksiyalar oxirgi mahsulotini nomlang?

- A) glutar kislota; B) qahrabo kislota;
 C) valerian kislota; D) moy kislota.

18. 342-343-b.



Quyidagi reaksiyanning oxirgi mahsulotini nomini ko'rsating?

- A) adipin kislota B) glutar kislota
 C) qahrabo kislota D) metilmalon kislota

45. To'rtta uglerod atomi bor to'yingan bir asosli, ikki atomli gidroksikislolaning nechta (stereoizomerlarini ham qo'shib hisoblaganda) izomeri bo'lishi mumkin?

- A) beshta B) oltita C) yettita D) sakkizta

6, 158- va 162-b; 24, c. 207-208

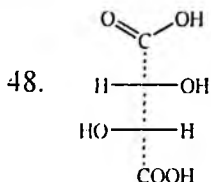
46. Birikmalarning qaysi biri optik izomerlar holida uchraydi?

- A) $(\text{CH}_3)_2\text{C}(\text{OH})-\text{COOH}$ B) $\text{CH}_2\text{OH}-\text{CH}_2-\text{COOH}$
 C) $\text{CH}_2\text{OH}-\text{CH}_2-\text{CH}_2-\text{COOH}$ D) $\text{CH}_2\text{OH}-\text{CHOH}-\text{COOH}$

47. Gidroksikislotalardan qaysi birining cis-va trans izomeri bor?

- A) $\text{CH}_2\text{OH}-\text{CH}=\text{CH}-\text{COOH}$ B) $\text{CH}_3-\text{CHOH}-\text{COOH}$
 C) $(\text{CH}_3)_2\text{C}=\text{CH}-\text{CHOH}-\text{COOH}$ D) $\text{HOOC}-\text{CH}_2-\text{CHOH}-\text{CH}=\text{CH}_2$

CH=CH₂

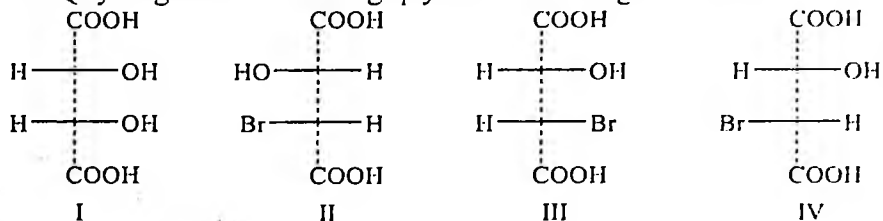


tuzilishli gidroksikislota xiral markazlari konfiguratsiyasini aniqlang?

A) R, S B) S, R C) S, S D) R, R

3, c. 613; 4, 378-b.

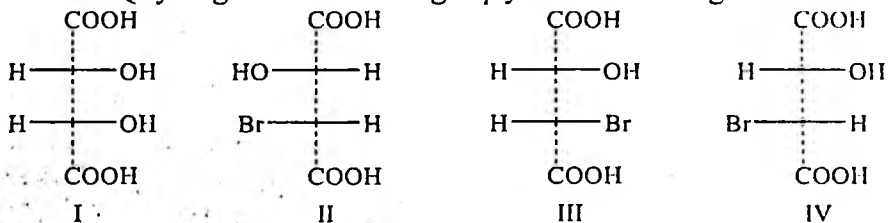
49. Quyidagi birikmalarning qaysilari bir-biriga enantiomer?



A) I va II B) II va III C) I va IV D) II va IV

16, c. 26

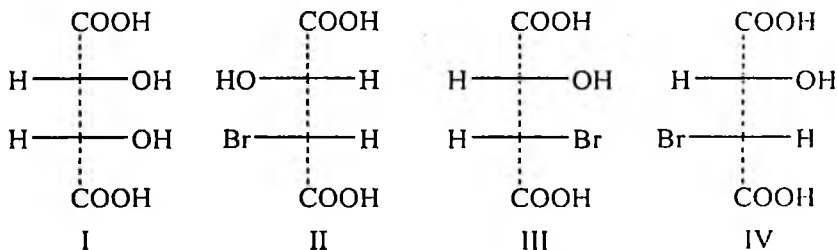
50. Quyidagi birikmalarning qaysilari bir-biriga diastereomer?



A) II va III B) I va II C) II va IV, III va IV D) I va IV

16, c. 26

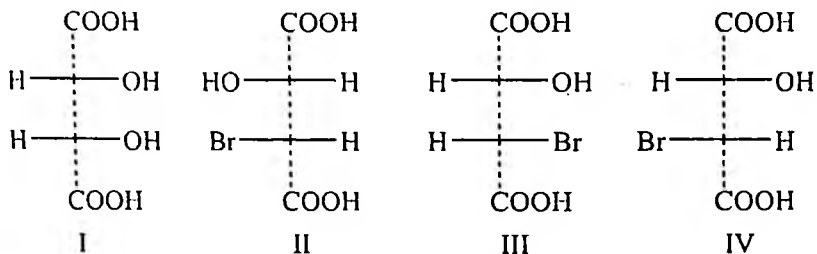
51. Quyidagi stereoisomerlarning qaysilari eritro-formalarga mansub?



A) I B) I va IV C) II va III D) IV

16, c. 26

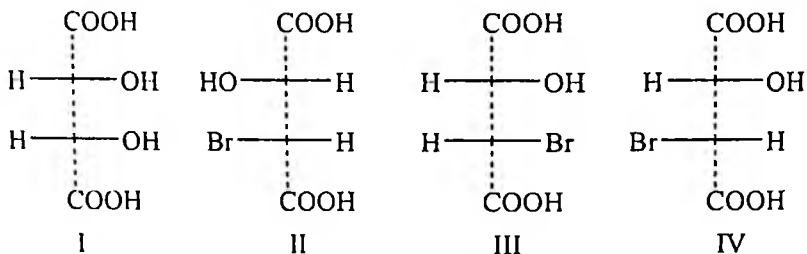
52. Quyidagi stereoisomerlarning qaysi biri treo-formalarga tegishli?



- A) I B) II C) III D) IV

16, c. 26

53. Quyidagi birikmalarning qaysi biri mezo-formalarga mansub?

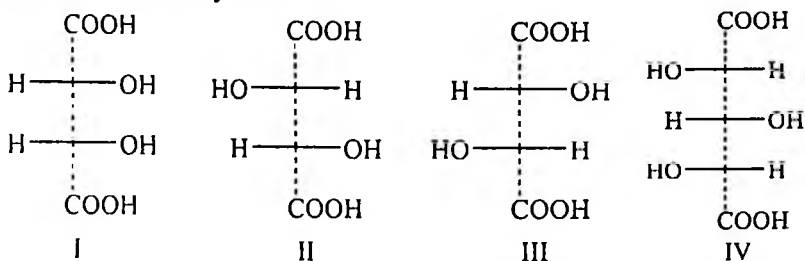


- A) IV B) III C) II D) I

54. Xlorolma kislotaning nechta optik faol izomeri bor?

- A) ikkita B) uchta C) to'rtta D) beshta
18, 357-b.

55. Quyidagi tuzilishga ega gidrosikislotalarning qaysi birlari uzum kislotaga deb yuritiladi?



- A) I; B) II va III ning teng miqdordagi aralashmasi;
C) IV D) I va III ning teng miqdordagi aralashmasi;

3, c. 613: 4, 378-b; 18, 352-b.

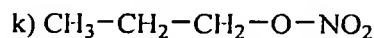
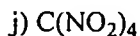
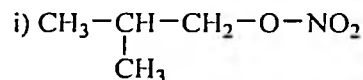
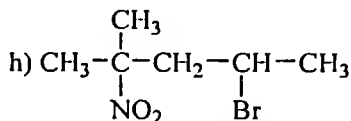
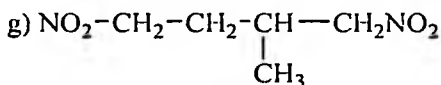
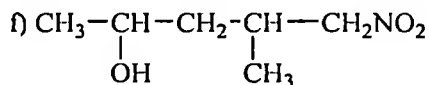
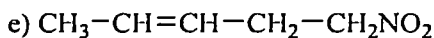
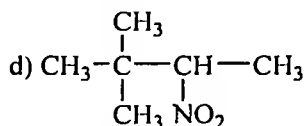
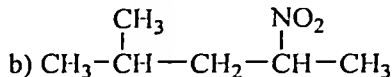
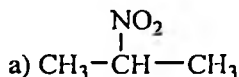
X BOB. NITROBIRIKMALAR

Nitrobirikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari qoida masala va mashqlar

1. Nitroguruhning elektron tuzilishi, mukammal strukturalarini va mezomer formulasini yozing.

2. Nitroguruhning qutbli tabiati nitroalkanlarning xossalari qoida qanday ta'sir ko'rsatadi?

3.

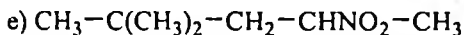
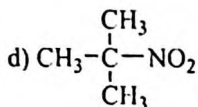
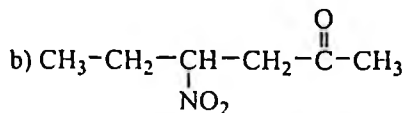
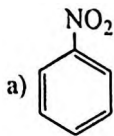


birikmalarni nomlang va birlamchi, ikkilamchi va uchlamchi nitrobirikmalarni ko'rsating.

4. a) 2-nitro-2-metilpropan; b) 2,4-dinitro-3-metil-2-gepten; d) 3-nitro-2,5—dimetil-3-geksen; e) 5-nitro-2-geksanol; f) 2-xlor-4-nitro-3-geksen; g) neopentilnitrit birikmalarning tuzilishini yozing.

5. a) $\text{C}_4\text{H}_9\text{NO}_2$, b) $\text{C}_5\text{H}_{11}\text{NO}_2$, tarkibli izomer nitrobirikmalarning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang. Asimmetrik uglerod atomi bor birikmalar stereoizomerlarning fazoviy formulalarini keltiring. Ularni R,S-tizim bo'yicha nomlang.

6. Quyidagi moddalarni nomlang

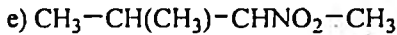
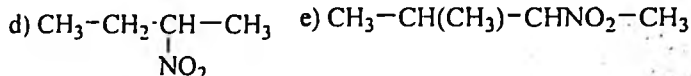
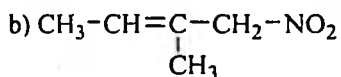
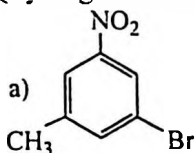


7. Quyidagi birikmalar uchun strukturaviy formulalarni yozing:

1) 2-nitrobutan; 2) 4,4-dimetil-2-nitropentan; 3) 3,5-dimetil-2-nitrogeksan; 4) 4-nitro-2-penten

8. Quyidagi formulaga mos keladigan nitro birikmalarining tuzilish formulalarini yozing. $\text{C}_5\text{H}_{11}\text{NO}_2$.

9. Quyidagi birikmalarni ayting:

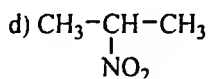
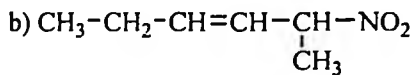
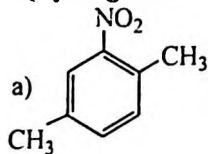


10. Quyidagi nomlarga mos keladigan formulalar formulalarini yozing:

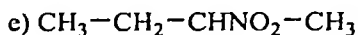
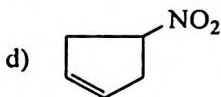
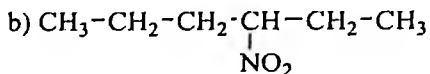
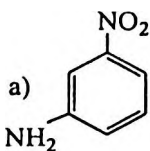
2,4-dinitrofenol; 3) 3-metil-2-nitropentan; 3,5-dinitrobenzoyl xlorid;

4) o-nitrobenzaldegid

11. Quyidagi birikmalarni nomlang:



12. Quyidagi birikmalarni nomlang:



13. Quyidagi birikmalar uchun strukturaviy formulalarni yozing:

- a) 2-nitrobutan; b) nitrotoluol; d) 2-metil-3-nitroheksan;
e) fenilnitrometan.

14. Quyida keltirilgan birikmalarning nomini ayting:

- a) $\text{CH}_3\text{CH}_2\text{CH}_2\text{ONO}$; b) $\text{CH}_3\text{CH}_2\text{CH}_2\text{ONO}_2$;
d) $\text{CH}_3\underset{\text{CH}_3}{\text{C}}\text{HCH}_2\text{NO}_2$; e) $\text{CH}_3\text{CH}_2\text{CH}_2\text{NO}_2$;

- f) $(\text{CH}_3)_3\text{CNO}_2$.

Tuzilish formulalarini ko'rsating. Nitrobirikmalar sinfiga ta'rif bering.

15. $\text{C}_4\text{H}_9\text{NO}_2$ tarkibli hamma nitrobirikmalarning formulasini yozing. Birlamchi, ikkilamchi va uchlamchi nitrobirikmalarni ko'rsating. Asimmetrik uglerod atomi bo'lgan birikma uchun stereoisomerlarning fazoviy formulalarini yozing. Ularning R, S - sistemaga binoan nomini ayting.

16. Quyidagi birikmalarning struktura formulasini yozing:

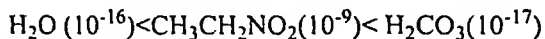
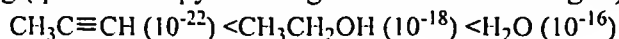
- a) 2-nitro-4-metilpentan; b) 2-nitro-3,3-dimetilbutan; d) 3-nitro-2,2-dimetilpentan; e) 4-nitropenten-2; f) 3-nitropropanol-1; g) 2-xlor-3-nitrobutan. Gruppalarining kattaligi va zanjirning nomerlanish tartibiga e'tibor bering.

17. Nitrometan molekulasining tuzilish formulasini keltiring, C va N tipini ko'rsating. Bu molekulaning atom-orbital modelini tuzing. Rezonans va mezomernya usuliga binoan nitrogrup- pa tuzilishini izohlang. N-O; C-N; C-H gruppalarining kimyoviy bog'larini izohlang.

18. Quyidagi faktlarni izohlang: a) nitrometanni dipol momenti (3,5 D) metilxloridning dipol momentidan (1,8 D) katta qiymatga ega; b) nitrometan- suyuqlik ($t_{\text{qay}}=101^\circ\text{C}$), metilxlorid esa gaz ($t_{\text{qay}}=23,7^\circ\text{C}$); B) nitrometan suvda yomon eriydi, lekin ishqorning suvdagi eritmasida yaxshi eriydi.

19. 1-nitropropan va nitro-2 metilpropanlarda nitrogruppalarining uglevodorod radikaliga ta'sirini ko'ring. Eng aktiv vodorod atomini belgilang. Qaysi nitrobirikmalar kislotalik xossasini namoyon etadi. Proton ajralishidan hosil bo'ladigan anionlar qanday tuzilishga ega? Nima sababdan bu ionlar mezomerlar deyiladi?

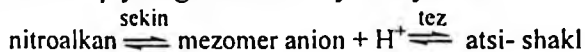
20. Quyndagi qatorda kislotalik xossalarning o'zgarishini tushuntiring (qavsda Ka qiymatining ortishi tartibi berilgan):



21. Ko'rsatilgan birikmalarni ulardagi kislotalik xossalarning kamayishiga qarab joylashtiring:

a) 1-nitropropan; b) 2-nitro-2-metilpropan; d) dinitro-metan; e) uchlamchi-butilspirt; f) etilatsetilen. Tushuntirib bering.

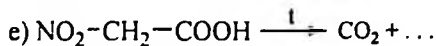
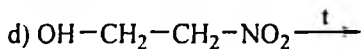
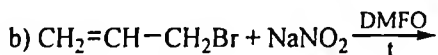
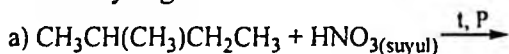
22. Nitroalkanlarda kuzatiladigan tautomeriya hodisasining umumiy ko'rinishi quyidagi sxema bo'yicha yoziladi.



birikmalar uchun tautomerlar sxema. ari o'zgarishini anik keltiring: a) nitrometan; b) nitroetan; b) 2-nitropropan. Muvozanat holdagi atsi-shaklning tarkibiy miqdori qanday (moddaning tartibini ko'rsting)? 2-nitro-2-metilpropan atsi-shaklga o'ta oladimi?

23. Quyidagi nitrobirikmalardan qaysilari CH kislotalar hisoblanib, o'zlarining atsi-shakllari bilan muvozanatda turadi; a) 1-nitrobutan; b) 2-nitrobutan; d) 2-nitro-2-metilbutan. Tushuntirib bering.

24. Quyidagi reaksiyalarning mahsuli bo'lgan nitrobirikmalarning nomini ayting:



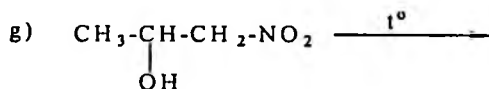
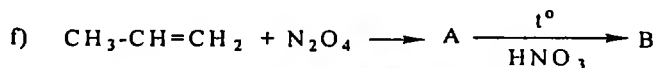
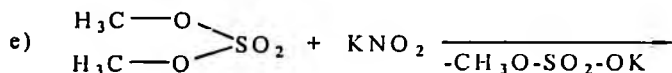
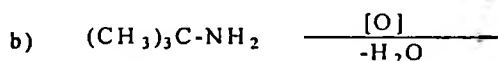
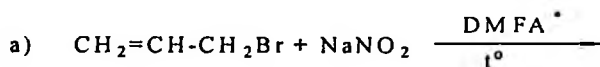
25. 2-nitrometanni quyidagi keltirilgan birikmalar asosida sintez qilish sxemasini taklif qiling:

a) butan; b) 2-brombutan; d) buten-1; e) butanol-1. Sharoitini ko'rsating.

26. Kumush nitritning a) etil bromid; b) izopropil xlorid; d) 2-brombutan; e) neopentil xlorid bilan reaksiya tenglamalarini yozing.

27. a) izopentan; b) neopentanni M.I.Konovalov usulida nitrolash reaksiyalari sxemalarini yozing. Reaksiyalarning borish sharoitini ko'rsating. Birlamchi, ikkilamchi va uchlamchi vodorod atomlarining nitroguruhga almashnish tezligini taqqoslang.

28. Alkanlarni 400-475°C da konsentrlangan nitrat kislota ta'sirida gaz fazada nitrolash nitrobirikmalar olishning sanoat usulidir. Bu sharoitda destruktiv nitrolash (uglevodorod zanjirining krekingi) jarayoni ham boradi. Pentan gaz fazada nitrolanganda qanday mononitrobirikmalar hosil bo'lishi mumkin?



o'zgarishlarni amalga oshiring va reaksiya mahsulotlarini nomlang.

29. Tegishli alkan; b) galogenalkan; d) sulfat kislota murakkab efiridan nitroetan olish reaksiyalari sxemalarini keltiring.

30. Toluoldan m-nitrobenzoy kislota olish reaksiyasini yozing?

31. Konovalov bo'yicha nitrolash paytida qanday moddalar hosil bo'ladi:

1) propan; 2) 2-metilbutan; 3) butan; 4) siklopentan?

Reaksiya tenglamalarini yozing, shartlarini ko'rsating, olingan birikmalarni nomlang.

32. AgNO₂ va propanalning propilenga ketma-ket ta'siri natijasida qanday birikma hosil bo'ladi? Reaksiyalarni yozing va tushuntiring.

33. Asetilendan 2-nitropropani oling. Butiraldegid bilan kondensatsiya reaksiyasi va NaOH bilan o'zaro ta'sirlashish sxemasini oxirigisi uchun yozing. 2-nitrobutanni 2-metil-2-nitropropan dan qanday reaksiya bilan farqlash mumkin?

34. a) nitroetan; b) 2-nitropropan; d) 2-nitro-2-metilpropan nitrobirikmalar qaytarilganda qanday birikmalar hosil bo'ladi?

35. Nitroguruhning qutbli xarakteri nitroalkanlarning xossalriga qanday ta'sir ko'rsatadi?

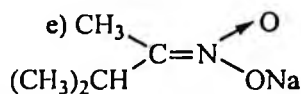
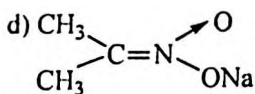
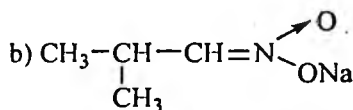
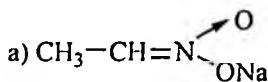
36. Nitrit kislota bilan a) 1-nitrobutan; b) 2-nitrobutan; d) 1-nitro-2-metilpropan; e) 2-nitro-2-metilpropan orasida boradigan reaksiyalar sxemalarini yozing.

37. Qaysi nitroalkan bilan reaksiya bormaydi? Nima uchun?

38. Nitrobirikmalardagi α -uglerod atomlari bilan bog'langan vodorod atomlarining harakatchanligini isbotlovchi reaksiyalarga misollar keltiring.

39. a) nitrometan; b) nitroetan; d) 2-nitrobutanning ishqordagi eritmasiga xlor ta'sir ettirilganda boradigan reaksiyalar sxemalarini yozing.

40.

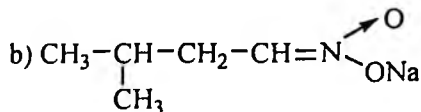
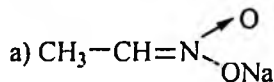


reaksiyalar sxemalarini oxirigacha yetkazing va reaksiya mahsulotlarini nomlang.

41. 1-nitropropan, propilnitrit va izopropilnitritlarni birbiridan qanday ajratish (farq qilish) mumkin?

42. Nitrobirikmalarning formulalar neytral tuzlariga konsentrlangan sulfat kislota ta'sir ettirilganda hosil bo'ladigan organik moddalarni nomlang va reaksiyalar sxemalarini keltiring.

43.



birlamchi nitrobirikmalarning tuzlari 85% li sulfat kislota bilan qizdirilganda boradigan reaksiyalar tenglamalarini keltiring.

44. Nitrit kislota bilan reaksiyaga kirishmaydigan, katalitik gidrogenlanganda $C_4H_{11}N$ birikmani hosil qiladigan $C_4H_9NO_2$ tarkibli moddaning tuzilishini aniqlang.

45. $C_4H_9NO_2$ tarkibli modda ishqor ishtirokida sirka aldegid bilan reaksiyaga kirishib, $C_6H_{13}NO_3$ moddani hosil qiladi. $C_6H_{13}NO_3$ qizdirilganda 3-nitro-2-geksenga aylanadi. Dastlabki moddaning tuzilishini aniqlang va reaksiyalar sxemalarini yozing.

46. Quyidagi birikmalardan qaysi biri nitrat kislota bilan reaksiyaga kirishadi:

a) nitroetan; b) 2-nitropropan; d) 3-nitro-3-metilpentan; e) nitrobenzol.

47. Nitroalkanlarning xossalarini xarakterlang. Nitroetan misolida shu sinf birikmalariga xos asosiy reaksiyalarni ko'rsating.

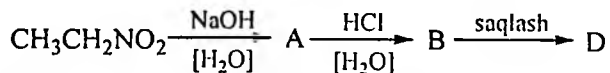
48. Nitroetan reagentlar bilan kislotadek reaksiyaga kirisha oladi:

a) $Na_2CO_3(H_2O)$; b) $NaOH(H_2O)$; d) $NaNH_2$, NH_3 (suyuq); e) $CH_2C\equiv CNa$, NH_3 (suyuq); f) $CH_3ONa(CH_3OH)$?

Bunday hollarda o'zaro ta'sirlanish sodir bo'lgan reaksiyaning sxemasini yozing.

49. Nima sababdan, nitrometan (karbonat kislota-dan ham) kuchsiz kislota qaramay, kuchli asoslar bilan eritmasi neytral muhitni shakllantiruvchi tuzlar hosil qiladn. Neytrallanish jarayoni "oniy bo'lishiga karamay, keltirilgan holda ma'lum vaqt talab kilishini tushuntiring.

50. O'zaro ta'sirlanishdan hosil bo'ladigan quyida-gn A, B va D birikmalarning formulasini yozing (moddalar ekvimolyar nisbatda olingan):



Nima sababdan birikmalardagi B modda eritmasi kislotalik, D modda eritmasi neytral muhitni ko'rsatishini tushuntiring.

51. 1- nitropropaning quyidagi reagentlar bilanreaksiyasini yozing:

a) $H_2[Ni]$; b) $NaNO_2[HCl, H_2O]$; d) $HCHO[NaOH]$;
e) $CH_3COCH_3[NaOH]$; f) (efir); g) $NaOH$, so'ngra H_2SO_4 .

52. $C_4H_9NO_2$ tarkibli nitrobirikmalarning hamma izomerlarini nitrit kislota bilan munosabatini solishtiring. O'zaro ta'sirlanish bor hollar uchun reaksiya sxemasini yozing.

53. Quyidagi juft birikmalarni qanday reaksiyalar yordamida farqlash mumkin: a) 2- nitropropan va 2- brom-propan; b) 1- nitrobutan va 2- nitro-2- metilpropan; d) 2- nitrobutan va butanol-2; e) 1- nitropentan va amilnitrit.

54. O'zgarishlar qanday amalga oshiriladi:

a) buten-2=2-aminobutan; b) propilen=2-nitro-butadiyen-1,3; d) propilen= 2-amin-2-metilpentan; g) 2-nitrobutan=butanon-2?

55. Ishqor bilan reaksiyaga kirishmaydigan, katalitik gidrogenlanishidan $C_4H_{11}N$ birikmasini hosil qiladigan $C_4H_9NO_2$ tarkibli birikmaning tuzilishini aniqlang.

56. C_4H_9Br moddasi natriy nitrit bilan dimetil formamidda qizdirilishidan $C_4H_9NO_2$ birikmaga o'tadi, u nitrit kislotaning suvlik eritmasi bilan chayqatilgandan so'ng havorangga bo'yaladi. Boshlang'ich va oxirgi birikmaning tuzilishini aniqlang. Reaksiya sxemasini yozing.

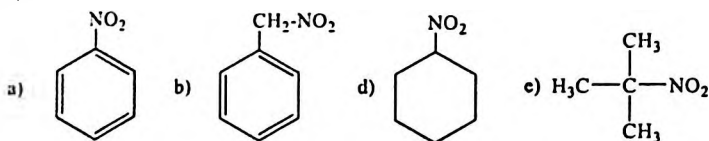
57. Ishqorning spirtidagi eritmasi ta'sirida $C_5H_{10}NO_2$ birikma $C_5H_{11}NO_2Na$ ga aylanadi, u sulfat kislota ta'sirida dietilketon hosil qiladi. Boshlang'ich birikma qanday tuzilgan?

58. C_4H_9Br galogenli hosila kumush nitrat bilan efirda Qizdirilganda $C_4H_9NO_2$ tarkibli ikki xil birikma hosil bo'ladi. Ulardan biri ishqorda eriydi, lekin kislota qo'shilganida yana o'zgarishsiz oldingi holatga ajraladi, ikkinchisi esa bu sharoitda butanol-2 ga aylanadi. Hamma reaksiya sxemasini yozing va birikmalarni nomlang.

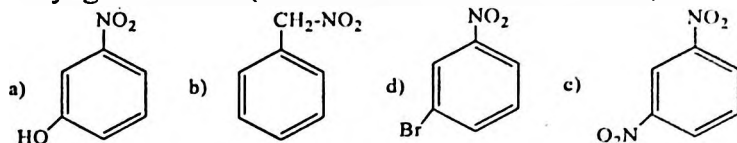
59. $C_4H_9NO_2$ birikmasi ishqor ishtirokida sirka aldegidi bilan reaksiyaga kirishi $C_6H_{13}NO_3$ moddasi hosil bo'ladi, qizdirilganda 3-nitrogeksen-2 ga aylanadi. Boshlang'ich moddaning tuzilishini aniqlang. Reaksiya sxemasini keltiring.

60. Reaksiya tenglamalarini yozing, tushuntirish bering, reaksiya mahsulotlarini nomlang.

61. Quyidagi birikmalarning qaysi biri propan bilan reaksiyaga kirishadi:



62. Quyidagi birikmalardan qaysi biri ishqorning suvli eritmasi bilan reaksiyaga kirishadi (isitilmasdan va katalizatorsiz)?

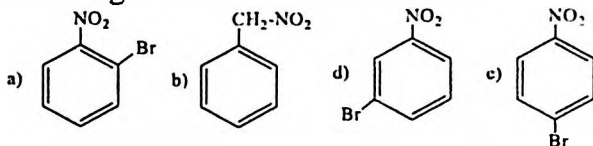


63. Nitrometanning formaldegid bilan kondensatsiyalanish reaksiyasini va hosil bo'lgan birikma uchun nitrat kislota bilan eterefikatsiya reaksiyasini yozing.

64. 2-nitrobutan uchun quyidagi moddalar bilan reaksiyalarni yozing:

1) butil aldegid; 2) vodorod; 3) nitrat kislota; 4) soda.

65. Quyidagi birikmalardan qaysi biri ishqorning suvli eritmasi bilan o'zaro ta'sir qiladi (katalizator va isitilmasdan)? Reaksiyalarni yozing va tushuntiring.



66. Quyidagi nitrobirikmalarning ishqordagi eritmasiga xlor ta'sir ettirilganda boradigan reaksiyalar sxemalarini yozing: a) nitrometan; b) 2-nitrobutan.

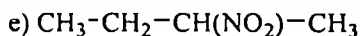
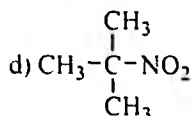
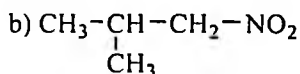
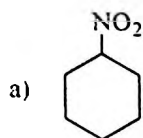
67. 2,4,6-trinitro-bromobenzol, p-bromonitrobenzol, m-bromonitrobenzol, bromobenzol birikmalarini xlorning nukleofil reaktivlar ta'sirida reaktivligini oshirish maqsadida joylashtiring.

68. Quyidagi birikmalardan qaysi biri gidroksidi suvli eritmasi bilan reaksiyaga kirishadi?

1) nitrosiklogeksan; 2) nitrobenzol; 3) fenilnitrometan; 4) p-dinitrobenzol.

69. Tushuntirish bering va reaksiya tenglamalarini bering.

70. Quyidagi birikmalardan qaysi biri atsetaldegid bilan reaksiyaga kirishadi?

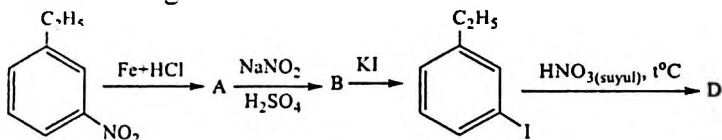


71. Qaysi birikmaning kislotaligi yuqori: a) fenol yoki p-nitrofenol; b) p-nitrofenolmi yoki m-nitrofenolmi? Javobni asoslang.

72. Quyida sanab o'tilgan birikmalarni nitratlash tezligini oshirish tartibida joylashtiring: N, N-dimetilanilin; o-nitroetilbenzol; p-metilbenzo kislota. Tegishli reaksiyalarni yozing.

73. Propilendan 1-nitropropanni oling va propanal bilan kondensatsiya natijasida olingan birikmaning qaytarilish va suvsizlanish reaksiyalari tenglamalarini yozing.

74. Quyidagi o'zgarishlarni amalga oshiring va reaksiya mahsulotini nomlang:



75. Propilendan 1-nitropropanni oling va nitropropanni propanal bilan kondensatsiyalash natijasida olingan birikmaning qaytarilishi va suvsizlanishi uchun reaksiya tenglamalarini yozing. 1-nitropropanni 2-nitropropandan qanday reaksiya bilan ajratish mumkin

76. Nitrit kislota bilan quyidagi nitroalkanlar orasida boradigan reaksiyalarning sxemalarini keltiring: a) 2-nitrobutan; b) 2-metil-1-nitropropan; d) 2-metil-2-nitropropan. Qaysi nitroalkan bilan reaksiya bormaydi? Nima uchun?

77. Quyidagi nitroalkanlar qaytarilganda qanday birikmalar hosil bo'ladi? a) 1-nitropropan; b) 2-nitropropan; d) 2-metil-2-nitropropan

78. Quyidagi nitrobirikmalar qaytarilganda qanday birlamchi aminlar olinadi: a) 2-nitrobutan, b) nitrobenzol, v) 2-metil 2-nitropropan?

79. Katalitik qaytarish yo'li bilan 29,2 g butanamin-2 olish uchun qancha massali 2-nitrobutan kerak bo'ladi? Reaksiyaning unumini nazariyga nisbatan 80% deb hisoblang.

80. 36,8 g aromatik uglevodorod nitrolandi, bunda yagona mononitrososila olindi, u kislotali muhitda temir bilan qaytarilganda olingan moddaning unumi 60% bo'ldi; bu modda 14.04 g NaCl ga konsentrlangan mo'l sulfat kislotaga ta'sir ettirilganda ajralib chiqadigan gazni batamom yutadi. Boshlong'ich uglevodorodning tuzilishini aniqlang.

81. Nitrit kislotaga bilan reaksiyaga kirishmaydigan. katalitik gidrogenlanganda $C_4H_{11}N$ birikmani hosil qiladigan $C_4H_9NO_2$ tarkibli moddaning tuzilishini aniqlang.

82. 1,2-dixloro-3,5-dinitrobenzolni natriy metoksid bilan qayta ishlash jarayonida qanday birikma hosil bo'ladi.

Nitrobirikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

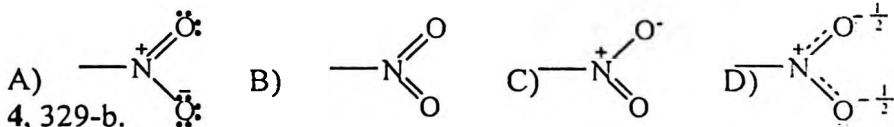
1. $C_5H_{11}NO_2$ tarkibli strukturaviy izomer nitroalkanlarning soni nechta?

- A) oltita; B) yettita; C) sakkizta; D) to'qqizta;
6, 209- va 212-b.

2. Nitroalkanlarning qaysi biri fazoviy izomerlar holida uchrashi mumkin?

- A) 1- nitrobutan; B) 2-metil-1 nitropropan;
C) 2-metil-2-nitropropan; D) 2- nitrobutan;

3. Nitroguruhning tuzilishini qanday tasvirlash talabga to'la javob beradi?



4. Alkanlarning qaysi biri M.I.Konovalov reaksiyasi sharoitida eng oson nitrolanadi?

- A) n-geksan; B) neogeksan; C) izogeksan; D) n-geptan;

4. 327-b: 8, c. 71-78; 19, кн. 1, c. 216

5. Alkan va nitrat kislotaning bug`lari maxsus reaktorlarda qisqa vaqt (0,2-2 sekund) ichida 420-480°C da qizdirilib, so`ngra tez sovutilganda gaz fazada nitrolash amalga oshadi. Bu reaksiyani qachon va kim ochgan?

- A) 1889- yilda M.I. Konovalov; B) 1926- yilda A.N. Titov;
C) 1927- yilda A.V. Topchiev; D) 1930- yilda X. Gess;

4. 327-b.

6. Alkanlarni 40-70 % li nitrat kislota bug`i bilan 400-500°C da va yuqori bosimda nitrolash qanday mexanizm bo`yicha boradi?

- A) S_N1 B) S_N2 C) S_R D) E_N1

2, т.1, c. 157; 8, c. 71; 11, c. 201

7. Quyidagi reaksiya $R-X + NaNO_2 \rightarrow R-NO_2 + NaX$ qaysi erituvchi (lar) da yaxshi boradi?

- A) metanol yoki etanolda B) xloroform yoki dixloretanda;
C) dimetilsulfoksid yoki dimetilformamidda; D) suvda;

4. 328-b.

8. Nitroguruh qanday effekt (lar) ni namoyon qiladi?

- A) faqat +I-effekt; B) faqat -I -effekt;
C) faqat -M-effekt; D) -I - va -M- effektlar;

4. 329-b.

9. Nitroalkanlarning qaysi biri ishqor eritmasi ta'sirida atsinitrobirikma (atsi-shakl) ni hosil qila olmaydi?

- A) nitroetan; B) 1-nitropropan;
C) 2-nitropropan; D) 2-metil-2-nitropropan;

4. 330-b; 19, кн. 1, c. 218-219

10. Nitroalkanlarning qaysi biri nitrit kislota bilan reaksiyaga kirishmaydi?

- A) nitroetan; B) 1-nitropropan;
C) 2-nitropropan; D) 2-metil-2-nitropropan;

4. 331-b.

11. Birlamchi nitrobirikmalar uchun xos bo`lgan sezgir rangli sifat reaksiyani ko`rsating.

- A) o`yuvchi kaliyning kons. eritmasi ta'sirida ko`k rang beradi.
B) konsentrlangan sirka kislota ta'sirida qizil rang beradi.
C) oldin nitrit kislotani ta'sir ettirib, so`ngra ishqor bilan neytrallansa to`q qizil rangli tuz hosil bo`ladi.

D) FeCl_3 eritmasini ta'sir ettirganda binafsha rangli cho'kma hosil bo'ladi.

4, 331-b.

12. Birlamchi nitroalkanlarni sulfat kislotaning 85% li eritmasi bilan qizdirib, sanoatda qanday modda olinadi?

- A) gidrazin
B) psevdonitrol
C) nitrol kislotasi
D) gidroksilamin

4, 331-b.

13. Nitroalkanlarning IQ-spektrlarida ikkinchi bog'ining simmetrik va antisimmetrik tebranishlari bilan bog'liq bo'lgan yutilish maksimumlari qaysi sohalarda kuzatiladi?

- A) 1370 sm^{-1} va 1550 sm^{-1} ,
B) 1440 sm^{-1} va 1620 sm^{-1} ,
C) 1490 sm^{-1} va 1660 sm^{-1} ,
D) 1620 sm^{-1} va 1780 sm^{-1} ,

3, c. 372

14. Suvdagi eritmalarida nitroalkanlardan qaysi birining kislotaligi eng yuqori bo'ladi?

- A) $\text{CH}_3\text{-NO}_2$ B) $\text{CH}(\text{NO}_2)_3$ C) $\text{CH}_2(\text{NO}_2)_2$ D) $\text{CH}_3\text{-}\underset{\text{NO}_2}{\text{C}}\text{-CH}_3$

3, c. 373-374

15. Propanni gaz fazasida nitrolaganda 1-nitropropan, 2-nitropropan, nitroetan va nitrometan aralashmasi hosil bo'ldi. δ 0.95 m.h. (triplet); 2,0 (sextet); 4,5 (triplet); signallar (intensivliklar nisbati 3:2:2) bor. PMR-spektr reaksiyaning qaysi mahsulotiga tegishli?

- A) 2-nitropropan
B) nitroetan
C) nitrometan
D) 1-nitropropan

17, c. 92

Testlarning javoblari

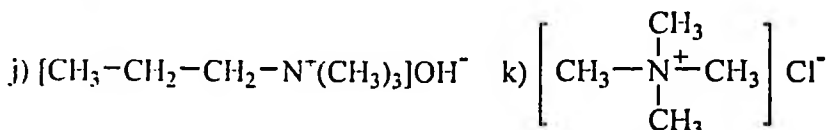
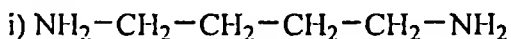
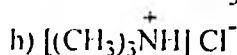
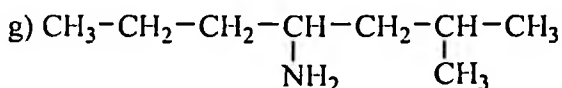
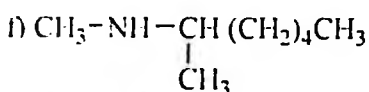
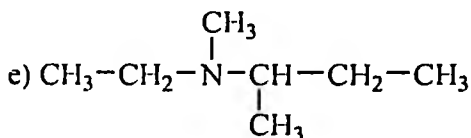
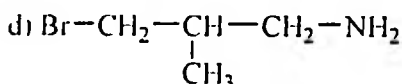
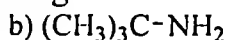
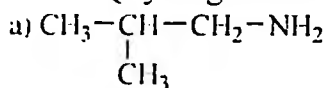
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2		7		12	
3		8		13	
4		9		14	
5		10		15	

XI BOB. AMINLAR

Aminlarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalariга oid masala va mashqlar

1. $C_4H_{11}N$ tarkibli aminlarning qanday optik izomerlari bor?
2. $C_6H_{15}N$ modda kuchli kislotalar bilan tuzlar hosil qiladi, nitrit kislotaga va sirka ангидриди bilan reaksiyaga kirishmaydi. Uning YaMR 1H -spektrida δ 1,0 m.h., δ 2,15 m.h. maydonida intensivligi 3:2 nisbatda ikkita singlet signallar bor. Dastlabki moddaning tuzilishini aniqlang.
3. Ikkilamchi aminning vodorod xloridli tuzi massa bo'yicha 43,55% xlor saqlasa, uning tuzilishini aniqlang.
4. $C_4H_{11}N$ tarkibli barcha birlamchi aminlarning tuzilish formulalarini yozib, sistematik nomenklatura bo'yicha nomlang.
5. $C_5H_{13}N$ tarkibli barcha uchlamchi aminlarning tuzilish formulalarini yozib, sistematik nomenklatura bo'yicha nomlang.
6. C_7H_9N tarkibli barcha birlamchi aminlarning tuzilish formulalarini yozing.

7. Quyidagi birikmalarni nomlang:



8. Quyidagi birikmalarning tuzilish formulalarini yozing: a) triizopropilamin; b) diikkilamchibutilneopentilamin; d) tetraetilammoniy bromid; e) 2-amino-3,4-dimetilpentan; f) 5-xlor-3-metil-2-butanamin; g) N-etil-2-metil-2-butanamin; h) N,N-dimetil-2-pentanamin; i) 4-amino-2-butanol; j) 1,4-butandiamin; k) trietanamin; l) trimetilammoniy gidroksid.

9. Bular ichida birlamchi, ikkilamchi va uchlamchi aminlarni ko'rsating.

10. Quyidagi birikmalarning qaysi biri optik faol enantiomerlar holida uchraydi? a) metilet-il-n-propilamin;

b) metilet-ilizopropilizobutilammoniy xlorid. Javobingizni asoslang.

11. «A» modda achchiq bodom hidi keladigan suyuq modda. «A» modda kislotali muhitda temir qirindisi bilan qaytarilib, suvda kam eriydigan rangsiz suyuqlik «B» ga aylanadi. «B» ga konsentrlangan xlorid kislota ta'sir ettirilsa, ekzotermik reaksiya borib, «C» tuz hosil bo'ladi. «A», «B» va «C» lar qaysi moddalar? Ularning formulalarini va tegishli reaksiyalarning tenglamalarini yozing.

12. «A» modda suvda eriydigan kristall modda bo'lib, kumush nitrat bilan oq cho'kma hosil qiladi. «A» moddaga natriy gidroksid ta'sir ettirilsa, suvda kam eriydigan rangsiz moysimon suyuqlik «B» birikma hosil bo'ladi. «B» birikmaga bromli suv ta'sir ettirilganda oq cho'kma «C» modda hosil bo'ladi. «A», «B» va «C» lar qaysi moddalar? Ularning formulalarini va tegishli reaksiyalarning tenglamalarini yozing.

13. «A» tuzning suvli eritmasi kumush nitrat bilan oq cho'kma hosil qilib, ishqor ta'sir ettirilsa «B» gaz ajraladi, bu gaz yonganda yonishga yordam bermaydigan ikki gaz hosil bo'lib, ulardan biri «C» ohakli suvni loyqalantiradi. «A», «B» va «C» lar qaysi moddalar? Ularning formulalarini va tegishli reaksiyalarning tenglamalarini yozing.

14. $C_9H_{11}NO_3$ tarkibli birikma bromli suv bilan $C_9H_9Br_2NO_3$ tarkibli, natriy gidroksid bilan $C_9H_9NNa_2O_3$ tarkibli, vodorod xlorid bilan $C_9H_{12}ClNO_3$ tarkibli modda hosil qiladi. Bu moddaning mumkin bo'lgan formulalaridan birini keltirib, tegishli reaksiya tenglamalarini yozing.

15. 27,7 g sirka kislota va birlamchi amin sulfatini neytrallash uchun 145,5 ml 10% li (zichligi 1,1 g/ml) natriy gidroksid eritmasi sarflandi. Shunday massadagi namuna ortiqcha olingan bariy xlorid bilan ishlov berilganda 23,3 g cho'kma tushdi. Qaysi aminning sulfati olingan? Izlanayotgan modda molekulasida bitta azot va bitta oltingugurt atomi mavjudligini inobatga oling.

16. 487. Birikmalarning struktura formulasini yozing:

a) propilamin; b) dietilamin; d) metiletilamin; e) trimetilamin; f) metilzopropilamin; g) dimetiletilamin. Ulardan qaysilari birlamchi, ikkilamchi, uchlamchi ekanligini aniqlang. Tuzilish izomerlarini belgilang.

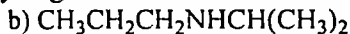
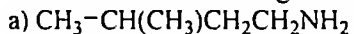
17. $C_4H_{11}N$ tarkibli hamma izomer aminlarning struktura formulalarini yozing. Ularni azot atomiga birikkan radikallar nomi bilan atang. Har bir aminlarning turlarini ko'rsating.

18. $C_5H_{13}N$ molekulyar formulalarga nechta uchlamchi aminlar to'g'ri keladi. Ularninomini ayting.

19. Birikmalarning struktura formulalarini yozing:

a) 2- aminpentan; b) 2-amin-3-metilbutan; d) 2- amin N,N-dimetilpentan; g) 2-amin-2-metil-N-etilbutan; d) 1,3-diaminpropan; e) 1-amini4-xlorbutan; j) 4-amin-butanol-1. Zanjirdagi uglerodlarning nomerlanishiga va amin guruhning xalqaro nomenklatura bo'yicha nomlanishidagi joyiga e'tibor bering.

20. Birikmalarning nomini ayting:



21. Proyeksiya formulalarini keltiring:

a) D-2- aminbutan; b) L-2- aminpentan; b) treo-2.3- diaminbutan; g) eritro-3- aminbutanol-2.

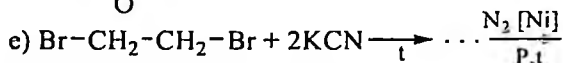
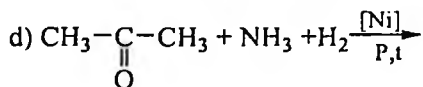
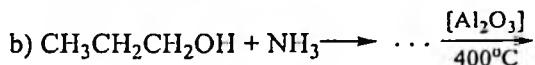
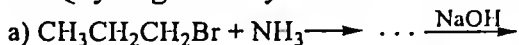
22. Metilamin molekulasining atom-orbital modelini tasvirlang. Azot va uglerod atomlari gibridlanish turini ko'rsating. Mavjud kimyoviy bog'larning qutblanganligini xarakterlang. Amin va spirtlarning vodorod bog'larini solishtiring.

23. Quyidagi faktlarni izohlang: a) 1- aminpentan ($130^\circ C$) n-pentanga ($36^\circ C$) nisbatan yuqori, lekin pentanol-1 dan ($138^\circ C$) past haroratda qaynaydi; b) trietilaminning qaynash harorati trietilmetanning qaynash haroratiga yaqindir (qaynash harorati $89,5^\circ C$ va $93,3^\circ C$); d) etilamin va dietilamin suvda yaxshi eriydi, trietilamin esa suvda yomon eriydi.

24. Etilamin misolida aminlarning suvda erishida buladigan kimyoviy jarayonlarni ko'osating. Bunda aminlar qanday xossaga ega bo'ladi? Asos, kislota, tutashgan asos va tutashgan kislota iboralarini

ta'riflang. Kanday qiymatga asoslik konstantasi deyiladi? Uni qanday aniqlanadi? pK_b va pK_{BH^+} nimani bildiradi? Nima sababdan aminlarning asosligi oxirgi qiymat bilan xarakterlanadi?

25. Quyidagi reaksiyalardan hosil bo'ladigan aminlarni nomlang:



26. Quyidagi birikmalar asosida n-butilaminning olinish sxemasini yozing: a) n-butilbromid; b) butanol-1; d) 1-nitrobutan; e) buten-1; f) moykislota amidi.

27. Etilen va istalgan anorganik birikma asosida:

a) etilamin; b) propilamin; d) etilpropilamin; e) dietilpropilamin; f) trietilpropilammoniy bromid; g) 2- aminetanol; h) 1,2-diaminetanni hosil qiling.

28. Metanol va anorganik birikmalardan qanday qilib: a) tetrametilammoniy bromid; b) metiletilamin; B) trimetiletilammoniy gidroksid hosil qilish mumkin?

29. Istalgan noorganik moddalardan foydalanib metandan anilin hosil qiling.

30. 7 % qo'shimchalari bo'lgan 85 g nitrobenzol namunasi anilingacha qaytarildi; reaksiyaning unumi 85%. Hosil bo'lgan anilinning massasini toping.

31. 15,5 g benzolni bromlashda ajralgan gaz 30 g etilaminning suvli eritmasi bilan to'liq reaksiyaga kirishadi. Bromlash 70% unum bilan amalga oshgan bo'lsa, eritmadagi etilaminning massa ulushini toping.

32. 36,8 g aromatik uglevodorod nitrolanganda hosil bo'lgan mononitro hosilani kislotali muhitda temir bilan qaytarib 60% unum bilan olingan mahsulot 14,04 g natriy xloridga mo'l sulfat kislota ta'sir ettirilganda ajralgan gazni to'liq yutadi. Aromatik uglevodorodning tuzilish formulasini toping.

33. Quyidagi nitrobirikmalar, nitrillar va izonitrillar qaytarilganda qanday aminlar hosil bo'ladi? Reaksiyalar sxemalarini yozib qaytaruvchilarni ko'rsating.

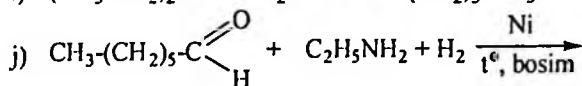
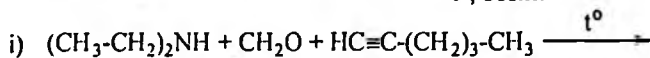
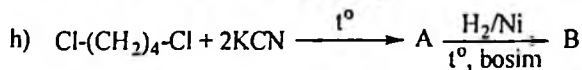
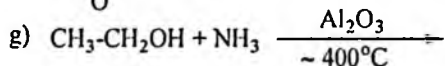
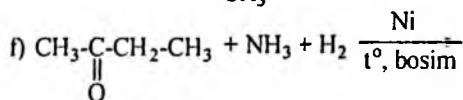
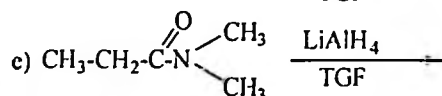
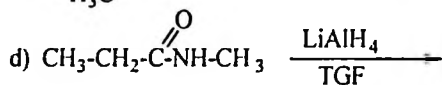
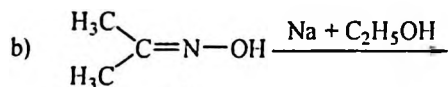
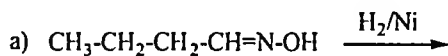
34. 1-nitropropan; b) 2-nitrogeksan; d) 3-nitro-2,3-dimetilpentan; e) butannitril; e) etilizosianid; f) izobutilizosianid.

35. n-propil bromidni ortiqcha olingan ammiak bilan qizdirilganda (Gofman reaksiyasi) boradigan reaksiyalar tenglamalarini yozing. Uchlamchi butil bromiddan shu usul bilan tegishli amin olish mumkinmi?

36. Ko'pchilik aldegid va ketonlar 40-150 °C da (bosim ostida) nikel ishtirokida ammiak va vodorod bilan reaksiyaga kirishib, aminlarni hosil qiladi. Xuddi shu sharoitda: a) n-valerian aldegid va b) dietilketondan qanday aminlar hosil bo'ladi? Reaksiyalarni yozing.

37. Kislota amidlarining NaOBr yoki NaOCl ta'sirida (Gofman bo'yicha) parchlanishi aminlar sintez qilishning muhim reaksiyasidir. Shu usul bilan etilamin olish reaksiyasining mehanizmini yozing.

38. Quyidagi reaksiyalar natijasida hosil bo'ladigan aminlarni nomlang:

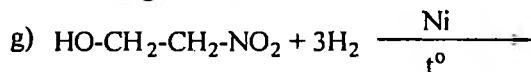
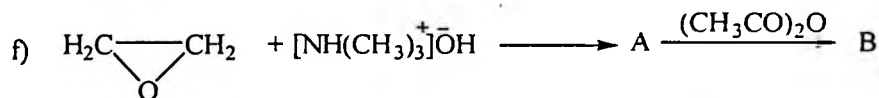
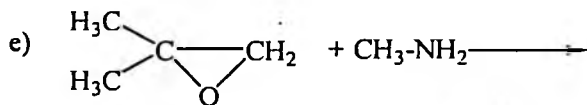
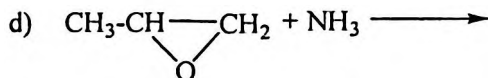
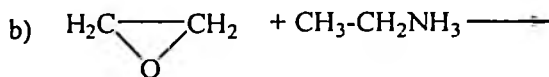


39. Uchlamchi alkil guruhlarini tutgan aminlarni (bularni boshqa usullar bilan olish qiyin) sintez qilish uchun spirtlar yoki alkenlar konsentrlangan sulfat kislota ishtirokida sianid kislota yoki nitrillar bilan reaksiyaga kiritiladi (Ritter, 1948-yil). Shu usul bilan uchlamchi buyilaminnisitez qiling.

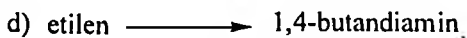
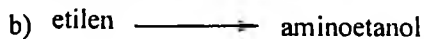
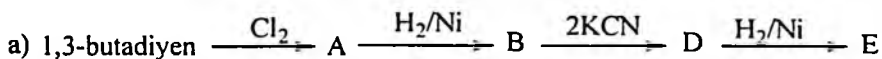
40. nitrobirikma; b) nitril; d) kislota amidi; e) spirt; f) galogenalkan; g) oksimdan 1-butanaminni sintez qilish raksiyalarini yozing.

41. Etil spirt va boshqa reagentlardan foydalanib, a) n-propilamin; b) metilikkilamchibutilaminni sintez qiling. Bu reaksiyalarning tenglamalarini yozing.

42. Quyidagi reaksiyalar natijasida hosil bo'ladigan aminospirtlarni nomlang:



43. Quyidagi o'zgarishlarni amalga oshiring:

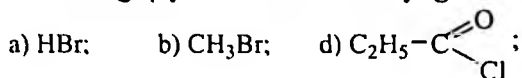


44. Aminlarning kimyoviy xossalariga umumiy xarakteristika bering. Etilamin va nitroetan misolida azot saqlovchi birikmalarning aminlar va nitrobirikmalardan keskin farqlanishini ko'rsating.

45. Aminlarning kislotalar ta'sirida tuz hosil qilishi reaksiyalarini yozing:

a) metilammoniy bromid; b) dietilammoniy gidrosulfat; d) trietilammoniy xlorid; e) izopropilammoniy yodid. Bu reaksiyalarda aminlar qanday xossaga ega bo'ladi?

46. 506. Propilamin, metiletilamin va trimetilaminlar quyidagi birikmalarning qaysilari bilan reaksiyaga kirishadi:



O'zaro ta'sir bor joyda reaksiya sxemasini yozing. (b) holat uchun reaksiya mexanizmini keltiring. Aminlar qaysi hollarda asoslik, nukleofilik va kislotalik xossalariga ega bo'lishini ko'rsating.

47. Etilamin va dietilaminning quyidagi birikmalar bilan reaksiya sxemalarini yozing: a) atsetilxlorid CH_3COCl ; b) sirka anhidrid $(\text{CH}_3\text{CO})_2\text{O}$; d) benzolsulfoxlorid $\text{C}_6\text{H}_5\text{SO}_2\text{Cl}$. Nima sababdan bu reaksiyalarni N-atsillash reaksiyalari deyiladi? Nega uchlamchi aminlar atsillanmaydi? Oxirgi holatda qanday birikma hosil bo'ladi?

48. Birlamchi, ikkilamchi va uchlamchi aminlarni benzolsulfoxlorid yordamida (Ginsberg namunasi) farqlash va ajratish mumkin. Shu usulga binoan, etilamin, dimetilamin va trimetilamin aralashmasini ajratish mumkinligini isbotlang.

49. Metilamin, dimetilamin va trimetilaminning nitrit kislota munosabatini solishtiring. Hosil bo'ladigan birikmalarni nomlang. Reaksiyalarning har xil borishi sababi nimada?

50. n-butilaminning xlorid kislota ishtirokida nitrit kislota bilan reaksiyasidan; n-butilspirt, ikkilamchi-butilspirt; buten-1 va buten-2 aralashmasi hosil bo'ladi. Bu birikmalarning hosil bo'lish reaksiyalari mexanizmini keltiring.

51. Qanday reaksiyalar yordamida quyidagi juft birikmalarni farqlash mumkin? a) 1- aminpentan va 1- nitropentan; b) izobutilamin va metilizopropilamin; b) diizopropilamin va trietilamin; g) propilamin va $\text{CH}_3\text{CH}_2\text{CH}_2\text{-NHCOCH}_3$ (N-propilatsetamid). Bu juft birikmalar aralashmasini qanday qilib ajratish mumkin?

52. Aminlarni ortiqcha miqdor metilyodid bilan qizdirilishidan to'rtlamchi ammoniy asoslarining tuzlari hosil bo'ladi. Quyidagi aminlar uchun to'la metillanish reaksiyalarini yozing: a) propilamin;

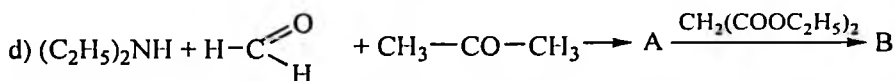
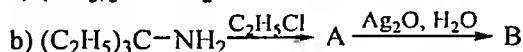
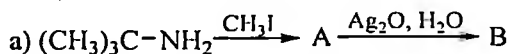
b) ikkilamchi-butilamin; d) etilpropilamin; e) etil- β -ftoretilamin. Olingan to'rtlamchi tuzlarni tegishli ammoniy asoslariga aylantiring. Bunday asoslarning termik parchalanishidan qanday birikmalar hosil bo'ladi? Gofman qoidasini ta'riflang va unga nazariy jihatdan tushuncha bering.

53. Aminlar qaysi reaksiyalarda asos xossalarini namoyon qiladi? Javobingizni misollar bilan asoslang.

54. Quyidagi aminlarga xlorid, sulfat va nitrat kislotalar ta'sir ettirilganda boradigan reaksiya tenglamalarini yozing. Hosil bo'ladigan tuzlarni nomlang.

a) n-butilamin, b) dietilamin, d) dimetiletilamin.

55.



o'zgarishlarni amalga oshiring. Oraliq va oxirgi mahsulotlarni nomlang.

56. a) metiletil-n-propilamin; b) metiletilamin; d) n-propilaminga nitrit kislota ta'sir ettirilganda boradigan reaksiyalar tenglamalarini yozing. Hosil bo'ladigan organik birikmalarni nomlang. Qaysiaminga nitrit kislota ta'sir qilmaydi? d-reaksiyaning mexanizmini yozing.

57. Kuchsiz ishqoriy muhitda birlamchi va ikkilamchi aminlar galogenlar bilan reaksiyaga kirishib, N-galogenaminlarni hosil qiladi. Shunday sharoitda n-propilamin va dietilaminga brom ta'sir ettirilganda boradigan reaksiya tenglamalarini yozing.

58. Aminlarning kislota xossalari qaysi reaksiyalarda nomoyon bo'ladi?

60. $\text{C}_4\text{H}_{11}\text{N}$ tarkibli optik faol suyuqlikning xlorid kislota bilan reaksiyasidan $\text{C}_4\text{H}_{12}\text{NCl}$ modda hosil bo'ladi, nitrat kislota bilan reaksiyasi natijasida esa gaz pufakchalari hosil bo'ladi. Dastlabki moddaning tuzilishini aniqlang. Reaksiyalar sxemalarini keltiring.

61. $\text{C}_4\text{H}_{11}\text{N}$ tarkibli birikma ishqor ishtirokida xloroform bilan reaksiyaga kirishib, yoqimsiz hidli $\text{C}_5\text{H}_9\text{N}$ moddani hosil qiladi. U katalitik gidrogenlanganda metil-n-butilaminga aylanadi. Dastlabki moddaning tuzilishini aniqlang. Reaksiyalar sxemalarini yozing.

62. $C_5H_{10}N$ tarkibli birikma xlorid kislota bilan tuz hosil qiladi, uning nitrit kislota bilan reaksiyasi natijasida esa azot ajraladi va $C_5H_{12}O$ birikmani hosil qiladi. $C_5H_{12}O$ oksidlanganda keton va unga kuchli oksidlovchilar ta'sir ettirilganda sirka va propion kislotalari hosil bo'ladi. Bu moddaning tuzilishini aniqlang. Reaksiyalar sxemalarini yozing.

63. $C_6H_{15}N$ modda kuchli kislotalar ta'sirida tuz hosil qiladi, nitrit kislota va sirka angidrid bilan esa reaksiyaga kirishmaydi. Uning PMR – spektrida ikkita singlet δ 1,0 m.h, δ 2,15 m.h. (intensivlik nisbati 3:2) mavjud. Dastlabki moddaning tuzilishini aniqlang.

64. $C_4H_{11}N$ tarkibli birikma sirka angidridi bilan reaksiyaga kirishmaydi, metil yodid bilan esa $C_5H_{14}NJ$ birikmasini hosil qiladi. Boshlang'ich modda qanday tuzilishga ega?

65. $C_4H_{11}N$ tarkibli birikma ishqor ishtirokida $CHCl_3$ bilan reaksiyaga kirishib noxush hidli C_5H_9N birikmasini hosil qiladi. Bu birikma vodorod ta'sirida katalitik gidrogenlanishidan metil-n-butilaminga aylandi. Boshlang'ich moddaning tuzilishini aniqlang.

66. $C_5H_{11}NO$ neytral birikma ishqoriy muhitda brom ta'sirida $C_4H_{11}N$ moddasini hosil qilib, asosli xossaga ega bo'ladi. Agar bu moddani to'la metillasak, so'ngra to'rtlamchi ammoniy xlorid ta'sirida Gorfman usulida parchalasadik, trimetilamin va buten-1 (buten-2 siz) hosil bo'ladi. $C_4H_{11}N$ va $C_4H_{11}NO$ birikmalarning tuzilishini aniqlang.

67. Asoslik xossaga ega bo'lmagan $C_4H_4N_2$ birikmasi katalitik gidrogenlanishi natijasida mineral kislotalar bilan tuz hosil qiladigan $C_4H_{12}N_2$ birikmaga aylangan. Agar oxirgi mahsulotga kislotali muhitda natriy nitrit ta'sir ettirilsa, butandiol-1,4 hosil bo'ladi. $C_4H_4N_2$ va $C_4H_{12}N_2$ birikmalarning tuzilishini aniqlang.

68. $C_6H_{15}N$ moddasi kuchli kislotalar bilan tuz hosil qilib, nitrit kislota va sirka angidridi bilan reaksiyaga kirishmaydi. Bu moddaning PMR-spektrida 8 1,0 m.u.; 2,15 m.u. ikkita singlet beradi, ularning intensivligi esa 3:2 nisbatdadir. Boshlang'ich moddaning tuzilishi qanday?

69. Aminlar ammiakdan kimyoviy xossalari bilan qanday farq qiladi?

70. Anilinni nitrobenzoldan qanday farqlash mumkin?

71. Fenilammoniy xloridning ishqor bilan ta'sirlashuv reaksiyasining tenglamaini yozing.

72. Nima uchun anilinning asosli xossalari dimetilaminnikidan kuchsiz?

73. Nitrobenzolning a) kislotali muhitda, b) ishqoriy muhitda, v) neytral muhitda anilingacha qaytarilish reaksiya tenglamalarini yozing.

74. Quyidagi moddalarning asoslik xossalari ortib borishi tartibida joylashtiring: metilamin, ammiak, anilin.

75. 3,36 l (n.sh.) vodorod xlorid bilan reaksiyaga kirisha oladigan dimetilaminning massasini hisoblang.

76. 40 g dimetilamin yonganda hosil bo'ladigan azot 15 °C va 95 kPa bosimda qanday hajmni egallaydi?

77. C_3H_9N tarkibli birlamchi va ikkilamchi aminlarga: a) CH_3Br , b) $n-C_3H_7Li$, d) $(CH_3CO)_2O$, e) C_2H_5-COCl ta'sir ettirilganda boradigan reaksiyalar tenglamalarini yozing.

78. Oltinugurt (IV)-oksidi, metilamin va kisloroddan iborat gazlar aralashmasini individual komponentlarga ajratishning kimyoviy usulini ko'rsating. Tegishli reaksiyalarning tenglamalarini yozing.

79. Quyidagi moddalarning qaysilari juft-juft bo'lib reaksiyaga kirisha oladi: anilin, siklopentan, brom, vodorod bromid? Reaksiyalarning tenglamalarini yozib, borish sharoitini ko'rsating.

80. Uchta raqamlangan ampulalarda uch suyuqlik: anilin, geksan va moy kislotalar bor. Ularning fizikaviy va kimyoviy xossalariga asoslanib qaysi ampulada qaysi modda borligini qanday aniqlash mumkin? Reaksiya tenglamalarini yozing.

81. Uchta probirkada uch eritma: fenilammoniy xlorid, etilamin va saxaroza eritmaları bor. Ularning fizikaviy va kimyoviy xossalariga asoslanib qaysi ampulada qaysi modda borligini qanday aniqlash mumkin? Reaksiyalarning tenglamalarini yozing.

82. Etilamin yonganda hosil bo'lgan gazlar 5,6 l hajmni (n.sh.) egallaydi. Yondirilgan etilaminning massasini toping.

83. Metilamin bilan etanol bug'lari aralashmasi yondirilganda 18 g suv va 2,24 l (n.sh.) ishqorda erimaydigan gaz hosil bo'ldi. Boshlang'ich aralashmadagi metilaminning massa ulushini toping.

84. Metan va etilamin aralashmasi mo'l xlorid kislota eritmasi orqali o'tkazilganda uning hajmi 40% ga kamaydi. Boshlang'ich aralashmadagi moddalarning massa ulushlarini toping.

85. Quyidagi moddalar hosil bo'lgan bo'lsa, qaysi ikki modda qanday sharoitda reaksiyaga kirishgan (moddalar koeffitsientlarsiz ko'rsatilgan)?

a) $C_3H_7NH_2 + KCl + H_2O$; b) $Cu + CO_2 + H_2O + N_2$; d) $CH_3OH + N_2 + H_2O$

Reaksiyalarning to'liq tenglamalarini yozing.

86. 3-aminopropen-1 ning xossalarini tavsiflang. Tegishli reaksiyalarning tenglamalarini yozing.

87. 100 g anilin, benzol va fenol aralashmasi orqali quruq vodorod xlorid o'tkazildi. Bunda 51,8 g cho'kma hosil bo'lib, u ajratib olindi. Filtrat bromli suv bilan ishlov berilganda 19,86 g cho'kma tushdi. Aralashmadagi moddalarning massa ulushlarini aniqlang.

88. Hajmi 18 ml (zichligi 1,0 g/ml) bo'lgan fenol bilan anilin aralashmasining benzoldagi eritmasiga ishqorning suvdagi eritmasi bilan ishlov berildi. Eritmaning massasi bunda 3,6 g ga kamaydi. Benzoldagi eritma ajratib olinib, xlorid kislota eritmasi bilan ishlov berilganda eritmaning massasi yana 5,4 g ga kamaydi. Boshlang'ich eritmadagi moddalarning massa ulushlarini toping.

89. 17 g nitrobenzolni qaytarib olingan anilin to'liq gidrogenlandi. Mahsulot yondirilganda hosil bo'lgan gazsimon moddalar normal sharoitga keltirilganda 7 l hajmi egalladi. Qolgan reaksiyalarning unumi 100% bo'lsa, nitrobenzolning qaytarilish reaksiyasi unumini toping.

90. 24.6 g nitrobenzol anilingacha qaytarilib, to'liq gidrogenlandi. Reaksiya mahsulotlari yondirilib, fosfor(V)- oksidi solingan nay orqali o'tkazilganda uning massasi 17,82 g ga ortdi. Qolgan reaksiyalar 100% unum bilan amalga oshgan bo'lsa, nitrobenzolning qaytarilish unumini toping.

91. Toluol, fenol va anilinning 12 g aralashmasi 0,1 M li xlorid kislota eritmasi bilan ishlov berilganda, organik moddalar qatlamining massasi 3,7 g ga kamaydi. Quritilgan organik moddalar qatlamiga natriy metalli ta'sir ettirilganda 300S va 95 kPa bosimda o'lchangan 537 ml gaz ajraldi. Boshlang'ich aralashmadagi moddalarning massa ulushlarini toping.

92. Fenol, anilin va dietil efiri aralashmasi 70 ml 0,3 M li natriy gidroksid eritmasi bilan to'liq reaksiyaga kirishadi. Organik qatlam orqali vodorod xlorid o'tkazilganda 3,89 g cho'kma tushib, organik qatlamning massasi 38,9 g ga tenglashdi. Organik qatlamga kumush

nitrat eritmasi ta'sir ettirilsa, 2,87 g oq cho'kma hosil bo'ldi. Boshlang'ich aralashmadagi moddalarning massa ulushlarini toping.

93. Fenilammoniy xlorid bilan benzoy kislota aralashmasiga mo'l miqdordagi natriy gidrokarbonat eritmasi ta'sir ettirilganda 1.12 l (n.sh.) gaz ajraldi. Shunday massadagi namunadan olingan anilin yondirilganda esa, ohakli suv bilan ta'sirlashmaydigan 224 ml (n.sh.) gaz hosil bo'ladi. Boshlang'ich aralashmadagi moddalarning massa ulushlarini toping.

94. 30 g benzol, fenol va anilin aralashmasini neytrallash uchun 49,7 ml 17% li (zichligi 1,08 g/ml) xlorid kislota eritmasi sarflandi. Shunday massadagi namuna bromli suv bilan ta'sirlashganda 99.05 g cho'kma tushdi. Boshlang'ich aralashmadagi moddalarning massa ulushlarini toping.

95. Anilin va fenol aralashmasi bilan ta'sirlasha oladigan 12.5% li xlorid kislotaning massasishunday namuna bilan ta'sirlasha oladigan 15% li kaliy gidroksid eritmasi massasidan 1,5 marta ortiq bo'lsa. aralashmadagi moddalarning ulushlarini toping.

96. Tarkibida bir xil Sondagi vodorod atomlarini saqlagan to'yingan diamin bilan alkin aralashmasining havoga nisbatan zichligi 2,138 ga teng. Shunday aralashmaning 5 g mi 3% li bromli suvning qanday massasini rangsizlantira oladi?

97. Sikloalkan bilan tarkibida sikloalkannikidan bitta vodorod atomi bittaga ko'p bo'lgan to'yingan amin aralashmasi havodan ikki marta og'ir. Shu namunaning 3 litri (n.sh) 20 g 16,3% li xlorid kislota bilan ta'sirlashganda hosil bo'ladigan moddalarning massalarini toping.

98. Biri havodan yengil bo'lgan ikki gaz aralashmasi mo'l miqdorda olingan mis(II)-oksidi (400°C), fosfor(V)-oksidi va qattiq natriy gidroksid solingan naylar orqali o'tkazildi. Birinchi nayning massasi 0,192 g kamayib, ikkinchi va uchinchi naylarning massalari tegishli 0,144 g ga va 0,088 g ga ortdi. Gazlar aralashmasi naylar orqali o'tgandan keyin 22,4 l (n.sh.) gazzimon modda qoldi. Boshlang'ich gazlar aralashmasining massasi 0,068 g ni tashkil etgan bo'lsa, uning hajmini (n.sh.), undagi gazlarning massa ulushlarini toping.

99. 35 l karbonat angidrid va metilamin aralashmasiga 25 l vodorod bromid aralastirilganda gazlar aralashmasining havoga

nisbatan zichligi 1,942 ga tenglashdi. Boshlang'ich aralashmadagi gazlarning hajmiy ulushlarini toping.

100. $C_8H_9O_2N$ tarkibli «A» modda xlorid kislota ishtirokida rux bilan qaytarilganda $C_8H_{12}NCl$ tarkibli moddagacha qaytariladi. «A» modda kaliy permanganatning suvli eritmasi bilan oksidlanganda $C_7H_4KO_4N$ tarkibli modda hosil bo'ladi. «A» modda $FeBr_3$ ishtirokida brom bilan reaksiyaga kirishib faqat bitta monobromli birikma olinadi. «A» moddaning tuzilish formulasini va uni olinish usulini ko'rsating. Tegishli reaksiyalarning tenglamalarini yozing.

Aminlarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. $C_5H_{13}N$ tarkibli bir-biriga strukturaviy izomer bo'lgan birlamchi aminlarning soni nechta?

- A) beshta; B) oltita; C) yettita; D) sakkizta;
6, 218- va 222-b.

2. $C_5H_{13}N$ tarkibli nechta o'zaro strukturaviy izomer ikkilamchi amin bor?

- A) beshta; B) oltita; C) yettita; D) sakkizta.
6, 218- va 222-b.

3. $C_6H_{15}N$ tarkibli o'zaro strukturaviy izomer uchlamchi aminlarning soni nechta?

- A) beshta; B) oltita; C) yettita; D) sakkizta.
6, 218- va 222-b.

4. $C_4H_{11}N$ tarkibli aminning nechta strukturaviy izomeri bo'lishi mumkin?

- A) beshta; B) oltita; C) yettita; D) sakkizta;
4, 337-338-b.

5. Birikmalarning qaysi biri optik faol enantiomerlar holida uchraydi?

- A) metiletilizobutilamin;
B) dimetilizopropilamin;
C) dietilizopropilizobutilammoniy xlorid;
D) metiletilizopropilizobutilammoniy xlorid.

4, 341-342- va 347-348-b; 15, c. 688-690; 16, c. 346

6. Birikmalarning qaysi birida azot atomi tetraedrik tuzilishga ega?

- A) metiletilizopropilamin; B) etilamin;
C) metiletilizopropilallilammoniy yodid; D) metiletilamin.

4, 347-348-b; 15, c. 690

7. Qanday nitrobirikma qaytarilganda 2,3-dimetil-3-pentanamin hosil bo'ladi?

- A) 2,3-dimetil-3-nitropentan; B) 2,2-dimetil-3-nitropentan;
C) 2,3-dimetil-2-nitropentan; D) 2,3-dimetil-4-nitropentan.

4, 338-b; 6, 216-b.

8. Qaysi bir galogenalkanni ammonoliz qilganda amin hosil bo'lmaydi?

- A) n-butil bromid; B) izobutil bromid;
C) izobutil xlorid; D) uchlamchibutil bromid.

15, c. 696-697

9. Ammiak yoki aminlarni alkil galogenidlar bilan alkilab aminlarni olish reaksiyasini kim ochgan?

- A) A. Vyurs; B) A. Gofman;
C) Ya. Geyrovskiy; D) S. Giller;

3, c. 391; 4, 339-b.

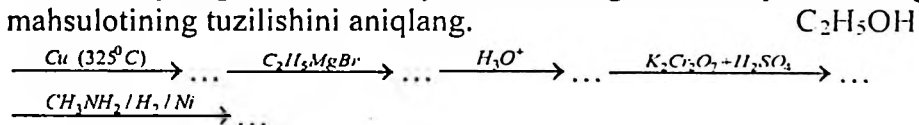
10. $(CH_3)_2C=N-OH \xrightarrow{Na + C_2H_5OH} \dots$

Reaksiya mahsuloti qanday birikma?

- A) metiletilamin; B) n-propilamin;
C) dimetilamin; D) izopropilamin.

3, c. 392; 4, 338-b.

11. Quyidagi sxema bo'yicha boradigan reaksiyalar oxirgi mahsulotining tuzilishini aniqlang.



- A) metilizobutilamin; B) metilizopropilamin;
C) metilikkilamchibutilamin; D) metil-n-butilamin.

6, 223-224-b.

12. Nosimmetrik epoksid (etilenoksid) larga ammiak va aminlarning birikishi kimning qoidasiga asosan boradi?

- A) G. Kiliani; B) X. Kolumb;
C) E. Knevenagel; D) K.A. Krasuskiy.

6, 224-b.

13. Aminlardan qaysi biri molekulararo vodorod bog'lanish hosil qilmaydi?

- A) *n*-propilamin; B) izobutilamin;
C) *n*-butilamin; D) metildietilamin.

14. Suvdagi eritmalarda aminlarning qaysi biri kuchli asos?

- A) metilamin; B) etilamin;
C) trimetilamin; D) dimetilamin.

4. 343-b.

15. Qaysi aminning nitrit kislota bilan reaksiyaga kirishuvidan N-nitrozodimetilamin hosil bo'ladi?

- A) dimetiletilamin; B) metildietilamin;
C) dimetilamin; D) metilamin.

4. 344-b.

16. Qaysi amin atsetil xlorid bilan reaksiyaga kirishmaydi?

- A) etilamin; B) dietilamin;
C) trietilamin; D) izopropilamin.

4. 344-b; 15, c. 715

17. Birikmalardan qaysi birining suvdagi eritmasi kuchli ishqoriy reaksiyaga ega?

- A) etilamin; B) ammiak;
C) dietilamin; D) tetraetilammoniy gidroksid.

4. 348-b; 15, c. 713; 19, кн.1, c. 226

18. Qaysi birikma juda kuchsiz NH- kislota hisoblanadi?

A) trimetilamin; B) tetrametilammoniy gidroksid;

- C) metiletilizopropilamin; D) dietilamin.

3. c. 399

19. Qaysi amin metallorganik birikmalar bilan reaksiyaga kirishmaydi?

- A) dietilamin; B) metiletilamin;
C) izopropilamin; D) metildietilamin.

3. c. 399

20. Geksametilendiamin (geksandiamin-1,6) qayerlarda ishlatiladi?

- A) erituvchilar sintezida;
B) dorivor moddalar sintezida;
C) korroziya ingibitori sifatida;
D) poliamidlar va sintetik tola (nylon) olishda;

4, 347-b.

21. Birlamchi va ikkilamchi aminlarning IQ-spektrlarida N-H bog'larning valent tebranishlari qaysi sohada kuzatiladi?

- A) 3200-3500 sm^{-1} B) 2900-3000 sm^{-1}
C) 2800-2900 sm^{-1} D) 2700-2800 sm^{-1}

3, c. 395

22. Gaz fazasida va qutbsiz erituvchilarda aminlarning qaysi biri nisbatan kuchli asos xossalarini namoyon qiladi?

- A) etilamin; B) dietilamin;
C) metiletilamin D) trietilamin

4, 343-b.

23. Geksametilendiamin sanoatda qaysi kislotaning dinitrilini katalitik hidrogenlab olinadi?

- A) po'kak; B) adipin; C) azealin D) sebatsin:

3, c. 401

24. Birlamchi va ikkilamchi alifatik aminlarda N-H bog'ning valent tebranishlari qaysi sohada namoyon bo'ladi?

- A) 3300-3500 sm^{-1} B) 3600-3650 sm^{-1}
C) 2900-3100 sm^{-1} D) 2700-2840 sm^{-1}

8, c. 259

25. R-NH₂ tipidagi birikma PMR-spektrida -NH₂ protonlarining kimyoviy siljishi qaysi maydonda kuzatiladi?

- A) δ 15,0-17,0 m.h. B) δ 6,5-7,5 m.h.
C) δ 9,0-11,0 m.h. D) δ 1,0-5,0 m.h.

17, c. 79

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	B	11	C	21	C
2	D	12	A	22	D
3	B	13	B	23	B
4	D	14	D	24	A
5	D	15	C	25	C
6	A	16	D		
7	C	17	C		
8	C	18	D		
9	B	19	A		
10	B	20	A		

XII BOB. METALLOORGANIK BIRIKMALAR

Metallorganik birikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalariga oid masala va mashqlar

1. Qanday birikmalarga elementorganik birikmalar deyiladi?
2. Quyidagi birikmalarning qaysilari elementorganik birikmalarga kirishini

ko'rsating. a) CH_3COONa ; b) $(\text{CH}_3\text{-COO})_2\text{Ca}$; d) $\text{CH}_3\text{-CH}_2\text{-ONa}$;
e) $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-Li}$; f) $\text{CH}_3\text{-Hg-CH}_3$; g) $\text{CH}_3\text{-SiCl}_3$; h) $\text{CH}_3\text{-CH}_2\text{-OMgCl}$;

$\text{CH}_3\text{-C}\equiv\text{C-K}$; j) $(\text{CH}_3\text{-CONH})_2\text{Hg}$;

3. a) $\text{CH}_3\text{-(CH}_2)_4\text{Si}$; b) $(\text{C}_2\text{H}_5)_3\text{P}$; d) $\text{C}_2\text{H}_5\text{MgBr}$; e) $\text{C}_2\text{H}_5\text{Na}$ f) $\text{CH}_3\text{-(CH}_2)_3\text{-Li}$ birikmalar molekularining elektron formulalarini yozing.

4. Uglerod va element atomlarining qisman zaryadlarini ko'rsating. Uglerod-element bog'ining tabiati bu birikmalarning qaysi fizik va kimyoviy xossalarida namoyon bo'ladi.

5. a) metilsimob xlorid; b) etinilmagniy bromid; d) dimetildixlorsilan; e) oktametiltrisiloksan; f) oktametiltrisilazan; g) tetraetilqo'rg'oshin; h) trimetilfosfin; i) trimetilfosfin oksid; j) etilfosfin kislota; k) dibrommagniyatsetilen birikmalarning tuzilish formulalarini yozing.

6. Quyidagi birikmalarni nomlang:

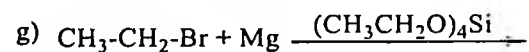
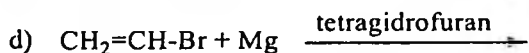
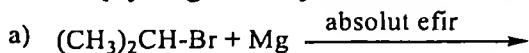
- | | |
|--|--|
| a) $(\text{CH}_3)_3\text{C-Zn-Br}$ | h) $(\text{C}_2\text{H}_5)_3\text{B}$ |
| b) $\text{CH}_2=\text{CH-CH}_2\text{-MgBr}$ | i) $\text{CH}_3\text{-(CH}_2)_4\text{-CH=CH-CH}_2\text{-Li}$ |
| d) $\text{C}_2\text{H}_5\text{-Hg-I}$ | j) $(\text{CH}_3)_2\text{CH-CH}_2\text{-K}$ |
| e) $(\text{CH}_3)_2\text{CH-CH}_2\text{-Hg-CH}_2\text{-CH(CH}_3)_2$ | k) $(\text{CH}_3)_3\text{Si-NH}_2$ |
| f) $\begin{array}{l} \text{C}_2\text{H}_5 \\ \diagdown \\ \text{Al-CH}_2\text{-CH}_2\text{-CH}_2\text{-CH}_3 \\ \diagup \\ \text{C}_2\text{H}_5 \end{array}$ | l) $(\text{CH}_3)_3\text{Si-O-Si-(CH}_3)_3$ |
| g) $\begin{array}{l} \text{Cl} \\ \diagup \\ \text{CH}_3\text{-Al} \\ \diagdown \\ \text{Cl} \end{array}$ | m) $(\text{CH}_3)_2\text{Si(OCH}_2\text{-CH}_3)$ |

Bu birikmalarning qaysilari sof va qaysilari aralash element organik birikmalarga kirishini ko'rsating.

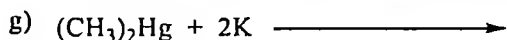
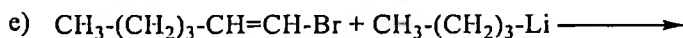
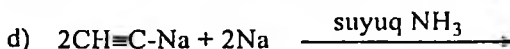
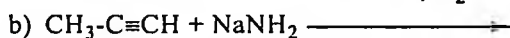
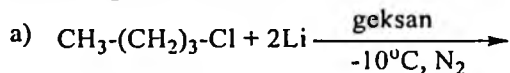
7. Quyidagi birikmalarining tuzilish formulalarini yozing: a) etilmagniy yodid; b) butilsimob bromid, d) diizobutildixlorsilan; e) trifenilfosfin; f) tetraetilqo'rg'oshin; e) dimetilfosfin.

8. a) trietilsilanol; b) dimetilsilandioli; d) propilsilantrioli; e) trietilsilazan; f) trimetildixlorsilan; g) α -trimetilsilsirka kislotaning tuzilish formulalarini yozing.

9. Quyidagi reaksiya mahsulotlarini nomlang.



10. Quyidagi reaksiyalar natijasida hosil bo'ladigan ishqoriy metallorganik birikmalarni nomlang :



11. a) uch xil usul bilan dietilsimobning; b) ikki il usul bilan dietilruxning; d) ikki xil usul bilan dietilqalayning; e) ikki xil usul bilan trietilborning olinish reaksiyalari tenglamalarini yozing.

12. a) $\text{CH}_3-\text{CH}_2-\text{ZnI}$; b) $\text{Cl}-\text{CH}=\text{CH}-\text{HgCl}$; d) $(\text{CH}_3)_2\text{CH}-\text{HgCl}$; e) $(\text{CH}_3)_2\text{CH}-\text{AlCl}_2$; f) $[(\text{CH}_3)_2\text{CH}]_2-\text{AlCl}$; g) $\text{C}_2\text{H}_5\text{SiCl}_3$; h) $(\text{C}_2\text{H}_5)_2\text{SiCl}_2$; i) $(\text{C}_2\text{H}_5)_3\text{SiCl}$; j) $\text{C}_2\text{H}_5\text{PCl}_2$; k) $\text{HC}\equiv\text{C}-\text{MgBr}$; l) $\text{BrMg}-\text{C}\equiv\text{C}-\text{MgBr}$ aralash elementorganik birikmalarning olinish reaksiyalari tenglamalarini yozing.

13. a) n-propil xlorid; b) n-propil bromid; d) n-propil yodid alkilgalogenidlarni absolyut efirda magniy bilan reaksiyaga kirishish qobiliyatining o'sib borish tartibida joylashtiring.

14. a) $n\text{-C}_4\text{H}_9\text{Br}$; b) $(\text{CH}_3)_3\text{C-I}$; d) $(\text{CH}_3)_2\text{CH-Br}$; e) $\text{CH}_2=\text{CH-CH}_2\text{-Br}$; f) $\text{CH}_3\text{-I}$; g) $\text{CH}_3\text{-CH}_2\text{-CH}(\text{CH}_3)\text{-Cl}$ galogenli hosilalarning qaysi biri yuqori unum bilan magniyorganik birikma hosil qiladi?

15. Grinyar reaktividan foydalanib, birlamchi, ikkilamchi va uchlamchi spirtlarning olinish reaksiyalari tenglamalarini yozing.

16. Quyidagi birikmalar qanday usullar bilan olinadi:

$\text{CH}_2=\text{CH-MgBr}$; b) $\text{BrMg-C}\equiv\text{C-MgBr}$; v) $\text{CH}\equiv\text{C-MgCl}$?

17. Dimetilruх va boshqa reagentlardan foydalanib, a) etanol; b) 2-metilpropanol-2; v) 3-metilbutanol-2 ni sintez qiling.

18. Sanoatda past bosimda polietilen olish qanday katalizatorlar ishtirokida amalga oshiriladi?

19. Qanday birikmalar metallorganik birikmalar deb ataladi? Quyidagi moddalardan qaysilari bu sinf birikmalariga tegishli:

a) $\text{CH}_3\text{C}\equiv\text{CNa}$; b) $\text{CH}_3\text{CH}_2\text{ONa}$; d) $n\text{-C}_4\text{H}_9\text{Li}$; e) $(\text{CH}_3\text{CH}_2)_3\text{Al}$; f) CH_3COOK ; g) CH_3HgCl ; h) CH_3MgJ ; i) $(\text{C}_2\text{H}_5)_2\text{Zn}$; j) $(\text{CH}_3)_4\text{Pb}$.

Ularning nomini ayting. Sof va aralash metallorganik birikmalarni ko'rsating.

20. Quyidagi birikmalarning struktura formulasini yozing:

a) etillitiy; b) etilmagniybromid; d) uchlamchi-butilkaliy; e) etilsimobxlorid; f) triizopropilaluminium; g) 1-natriybutin-1; h) metilkadmiyxlорid; i) tetraetilqo'rg'oshin. Bu birikmalarni uglerodmetall bog'dagi ionlikning kamayishi tartibida joylashtiring.

21. Quyidagi birikmalarning nomini ayting.

a) $(\text{CH}_3)_2\text{CHLi}$; b) $\text{CH}_3\text{CH}_2\text{CH}_2\text{MgBr}$; d) $(\text{CH}_3\text{CH}_2)_3\text{SnBr}$; e) $\text{NaC}\equiv\text{CNa}$; f) $\text{CH}_3\text{C}\equiv\text{CMgJ}$; g) $\text{CH}_3\text{CH}_2\text{HgCl}$. h) $(\text{CH}_3)_2\text{Zn}$.

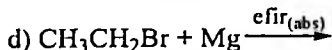
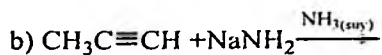
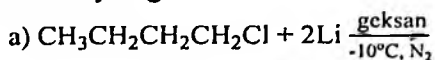
Uglerodmetall bog'ining har biriga tushuntirish bering.

22. Metillitiy va metilxlorid molekularining tuzilishini kuzating. C-Li va C-Cl bog'lar orasidagi asosiy farqlar nimadan iborat? Keltirilgan bog'larning geterolitik parchalanishidan hosil bo'ladigan ionlarning nomini ayting. Organik ionlarning tuzilishini tushuntiring.

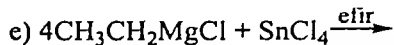
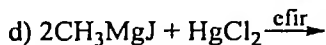
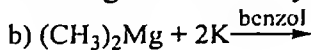
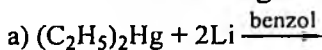
23. 319. Birikmalarning nomini ayting. Molekularning elektrofil va nukleofil markazlarini butun yoki kasrlik zaryadlar ($\delta+$ va $\delta-$) bilan belgilang. Har bir holatda uglerod-galogen yoki uglerod metall bog'ning ionli mexanizmida parchalanish yo'nalishini ko'rsating:

a) $\text{CH}_3\text{CH}_2\text{Br}$; b) $\text{CH}_3\text{CH}_2\text{Na}$; d) $\text{CH}_3\text{CH}_2\text{MgBr}$; e) $\text{CH}_3\text{CH}_2\text{ZnJ}$; f) $(\text{CH}_3)_2\text{CHJ}$; g) $\text{CH}_3\text{C}\equiv\text{CK}$.

24. Reaksiyalarni yozing va hosil bo'ladigan birikmalarning nomini ayting:



25. Quyidagi reaksiyalardan qanday metallorganik birikmalar olinadi? Birikmalarning boshlang'ich va oxirgi nomlarini ayting:



26. Quyidagi birikmalarni hosil qiladigan reaksiyalarni yozing: a) dietilsimob; b) etilmagniy yodid; d) metilruxxlorid; e) n-butillitiy.

27. Qanday birikmalarga Grinyar reaktivi deyiladi? Ular qanday olinadi? Quyidagi:



alkilgalogenidlarni magniy bilan reaksiyaga kirishish qobiliyatining kamayishi tartibida joylashtiring. Bu reaksiyalarda absolut efirning roli qanday?

28. Quyidagi birikmalarning qaysi biri suv bilan ta'sirlanadi: a) etillitiy; b) dietilruux; d) dimetilsimob; e) 1-natriy-propin-1; f) trietilaluminium; g) tetraetilqo'rg'oshin; h) izopropilmagniy bromid? Bunday hollar uchun reaksiyaning to'liq tenglamasini yozing.

29. Etilmagniy yodidining quyidagi birikmalar bilan reaksiyasini yozing: a) suv; b) metanol; d) metilatsetilen; e) sirka kislotasi. Nima uchun har bir holda bitta gazsimon modda hosil bo'lishini tushuntiring (qanday?).

30. Chugayev - Serevitinov reaksiyasining umumiy sxemasini yozing. Chugayev - Serevitinov usulida gekstan bilan aralash ko'rinishdagi geksil spirtning foiz miqdorini aniqlash uchun 0,2020 g namunada aktiv vodorodni aniqlash mobaynida 11,2 ml vodorod hosil bo'lgan. Aralashmadagi geksil spirti foizini aniqlang.

31. Agar n-butillitiyga (efirda):

a) formaldegid; b) atseton; d) uglerod-(IV)-oksid ta'sir ettirilsa, qanday birikmalar olish mumkin? Reaksiya mahsulotlarining gidrolizidan hosil bo'ladigan birikmalarning nomini ayting.

32. Quyidagi savollarga javob bering:

1. Dinatriy atsetilenni qanday erituvchida olish mumkin: a) suv; b) spirt; v) ammiak? Nega?

2. Metil magniyiodid olish uchun qanday erituvchidan foydalanish kerak: a) etanol; b) dietilefir; d) geksan? Nega?

3. Nima uchun organik sintezda sink organik birikmalarga nisbatan Grinyar reaktivi qulayroq?

4. Metallorganik birikmalar: a) oksobirikmalar; b) galogenalkillar bilan reaksiyaga kirishganda qanday reagent (elektrofil yoki nukleofil) sifatida ishtirok etadi? Javobingizni aniq misollar bilan isbotlang.

33. Quyidagi birikmalardan izopropilmagniybromidni sintez qilinish reaksiya sxemalarini taklif eting:

a) propan; b) propilen; d) propilbromid; e) izopropilspirt.

34. 1-brombutan va anorganik reagentlar asosida quyidagi birikmalarni hosil qiling:

a) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Li}$;

b) $\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{MgBr}$;

d) $\text{CH}_3\text{CH}_2\text{C}\equiv\text{CNa}$;

e) $\text{CH}_3\text{CH}_2\text{C}\equiv\text{CMgBr}$;

35. Qanday reagentlar ta'sirida va qanday sharoitda propilmagniybromiddan: a) propan; b) propanol; d) butanol-1; e) moy kislota hosil qilish mumkin.

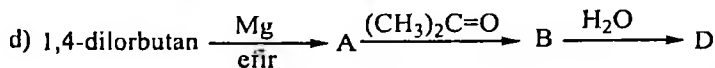
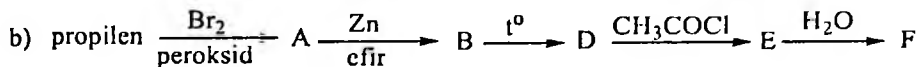
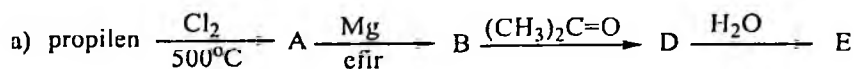
36. Grinyar reaksiyasi yordamida: a) butanol-1 (ikki variantda); b) butanol-2 (ikki variantda); d) 2-metilbutanol-2 (ikki variantda); e) izomoy kislota; f) etilpropilketon olinish sxemasini yozing.

37. Istalgan noorganik reagentlardan foydalanib, quyidagi o'zgarishlarni amalga oshiring:

a) etilbromid=butanol-2; b) etanol=butanol-1; d) propilen=2-metilpentanol-2; e) 1-brompropan=2-metil-pentanol-2; f) propilen=vinilsirka kislota; g) atsetilen=metilvinilkarbinol; h) metilatsetilen=butin-2 kislota.

38. Propilmagniy bromid va boshqa reagentlardan foydalanib, a) propan; b) 1-butanol; d) 1-propanol; e) moy kislotani sintez qiling.

39. Etil spirt, etilen va boshqa reagentlardan foydalanib, 1-butanolni sintez qiling.



reaksiyalar tenglamalarini yozing. Hosil bo'lgan oxirgi mahsulotlarni nomlang.

40. Magniyrganik va boshqa birikmalardan foydalanib (chumoli aldegidni ishlatmasdan), a) 1-butanol; b) 3-metil-1-butanol; d) 4-metil-1-pentanol; 1-geksanolni sintez qilish sxemalarini yozing.

41. Metilmagniyodid bilan a) suv; b) etil spirt; d) sirka kislota; e) etilamin; f) dietilamin; g) atsetilen orasida boradigan reaksiyalar tenglamalarini yozing. Bu reaksiyalar qayerda ishlatiladi?

42. Molekulyar massasi 46 ga teng bo'lgan 0,092 g spirt metilmagniyodid bilan reaksiyaga kirishganda 44,8 ml metan (n.sh.) hosil bo'ladi. Shu spirtning tuzilishini va uning molekulasida nechta faol vodorod borligini aniqlang.

43. Propillitiyga a) suv; b) etil spirt; d) propion kislota; e) yuqori bosim ostida etilen; f) bosim ostida va qizdirish bilan 1,3-butadiyen; g) vodorod xlorid; h) karbonat anhidrid ta'sir ettirilganda boradigan reaksiyalar tenglamalarini yozing.

44. Dimetilruv va boshqa reagentlardan foydalanib, a) etil spirt; b) 2-propanol; d) 2-metil-2-propanolni sintez qiling.

45. Trietilaluminium va a) suv; b) dietil efir; d) bosim ostida 100-120 °C da etilen orasida boradigan reaksiyalarning tenglamalarini yozing.

46. Aluminiumorganik birikmalardan foydalanib, etilendan a) $\text{C}_{12}\text{H}_{25}\text{OH}$; b) $\text{C}_{14}\text{H}_{29}\text{COOH}$ moddalarni sintez qiling.

47. Trimetilsilanol va a) Na; b) KOH; d) PbO; e) H_2SO_4 orasida boradigan reaksiyalar englamalarini yozing.

48. Dimetilsilandioldning polikondensatlanishidan kremniyorganik (siloksan) kauchuk olinadi. Shu reaksiya tenglamasini yozing. Bu kauchuk qayerlarda ishlatiladi?

49. Magniyorganik va boshqa birikmalardan foydalanib (aldegidlarni ishlatmasdan), ikkilamchi spirtlarni qanday sintez qilish mumkin?

50. Magniyorganik va boshqa reagentlardan foydalanib, a) trietilfosfin; b) dimetildietilsilan; d) propilsimob xlorid; e) trivinilbor; f) moy kislotani sintez qiling.

51. Metilmagniy yodid bilan a) suv; b) karbonat angidridi; v) atsetilen; g) sirka kislotasi; d) etilamin orasida boradigan reaksiyalar tenglamalarini yozing.

52. Tetrametilsilan va geksametildisilanning YaMR spektroskopiyasida etalon sifatida ishlatilish nimaga asoslangan?

53. Quyidagi fosfororganik birikmalarni asoslik xossasi kuchayib borish tartibida joylashtiring: a) $(C_2H_5)_3P$; b) $(C_2H_5)_2PH$; v) $(C_2H_5)PH_2$; a) 2-pentantiol; b) 2-metil-1-butantiol; d) 1-propantiol; e) metilpropilsulfid; f) heptil-(1,1-dimetil)etilsulfid; g) 3-metil-(1-metiltio)pentan; h) 1-(izopropiltio)pentan

54. Etantiolga: a) HgO ; b) KOH ; d) CH_3COOH ; e) CH_3-COCl ; f) $Pb(OCOCH_3)_2$; g) O_2 (havo); h) I_2 ; i) konsentrlangan HNO_3 ni ta'sir ettirilganda boradigan reaksiyalar tenglamalarini yozing. Hosil bo'ladigan moddalarni nomlang.

Metallorganik birikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. Uglarod-metall bog'laridan qaysi birining ionligi (ionlik darajasi) eng katta?

A) C-Li B) C-Ca C) C-K D) C-Na

10, 1, c. 372-373

2. Uglarod-metall bog'laridan qaysi birining ionligi (ionlik darajasi) eng kichik?

A) C-Al B) C-Mg C) C-Zn D) C-Hg

10, 1, c. 372-373

3. Moddalardan qaysi biri aralash elementorganik birikmalarga taalluqli?

A) $C_2H_5-Zn-C_2H_5$

B) $CH_2=CH-Li$

C) $(CH_3-CH_2)_2Hg$

D) $CH_2=CH-Mg-Cl$

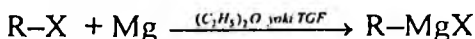
4, 354-b; 8, c. 271

4. Ruxorganik birikmalar birinchi bo`lib qaysi olim tomonidan va qachon olingan?

- A) E. Frankland, 1849 y.; B) Ya. Folgard, 1838 y.;
C) Yu. Fritsshe, 1910 y.; D) R. Frich, 1928 y.;

3, c. 255; 13, 139-b.

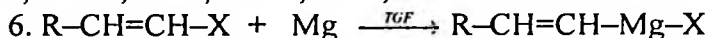
5. Magniyorganik birikmalar uglevododlarning galogenli hosilalariga magniy qirindisini ta'sir ettirib olinadi. Reaksiya odatda absolyut (mutlaq suvsiz) dietilefir yoki tetragidrofuran (TGF) eritmasida olib boriladi:



Bu kimning reaksiyasi?

- A) Giller; B) Geyrovskiy; C) Grinyar; D) Grefe;

3, c. 253; 13, 114-b; 18, 309-b.



Reaksiya mahsuloti kimning reaktivi?

- A) Nyulend; B) Nobel; C) Norman; D) Napiralskiy;

13, 118-119-b.

7. Alkilgalogenidlarning qaysi biri absolyut efirda magniy bilan eng oson reaksiyaga kirishadi?

- A) *n*-propilxlorid; B) *n*-propilbromid;
C) etilxlorid; D) *n*-propilyodid;

25, c. 181

8. Galogenli hosilalarning qaysi biri yuqori unum bilan magniyorganik birikma hosil qiladi?

- A) $CH_3-CH_2-CH_2-CH_2-Br$ B) $CH_2=CH-CH_2-Br$
C) $(CH_3)_2CHBr$ D) $(CH_3)_3C-Br$

25, c. 181

9. Galogenli hosilalarning qaysi biri rux bilan reaksiyaga kirishmaydi?

- A) C_2H_5Cl B) C_2H_5Br
C) C_2H_5I D) $CH_2=CH-Br$

3, c. 255

10. Simoborganik birikmalar birinchi marta qachon va kim tomonidan olingan?

- A) 1853 yilda E.Frankland; B) 1903 yilda V.Grinyar;
C) 1936 yilda M.Xarash; D) 1948 yilda

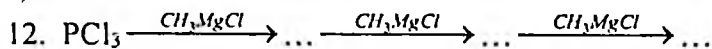
A.N.Nesmeyanov;

3, c. 256

11. Tetraetilqo'rg'oshin sanoat miqyosida qanday moddalardan olinadi?

- A) $PbCl_4 + C_2H_5Li \longrightarrow$ B) $PbCl_4 + C_2H_5MgCl \longrightarrow$
C) $Pb(Na) + C_2H_5Cl \longrightarrow$ D) $PbCl_2 + C_2H_5MgCl \longrightarrow$

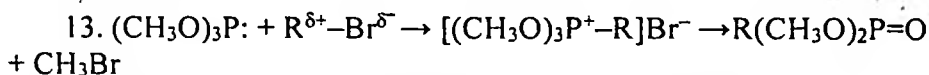
3, c. 261



Reaksiyalar oxirgi mahsulotining formulasini ko'rsating.

- A) faqat CH_3PCl_2 B) faqat $(CH_3)_2PCl$
C) faqat $(CH_3)_3P$ D) CH_3PCl_2 va $(CH_3)_2PCl$

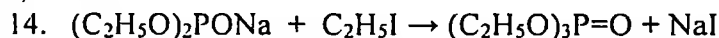
3, c. 276



Bu reaksiya kim(lar)ning qayta guruhlanishi deb aytiladi?

- A) Vagner-Meerveyn B) Volf
C) Lossen D) Arbuzov

3, c. 277



Bu reaksiya kim(lar)ning qayta guruhlanishi hisoblanadi?

- A) Vagner-Meerveyn; B) Kijner-Volf;
C) Lossen; D) Mixaelis va Bekker;

19, кн. II, c. 434

15. Alkanlar qatorining natriyorganik birikmalari odatdagi sharoitda qanday moddalar hisoblanadi?

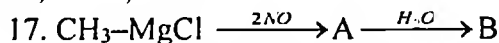
- A) rangsiz, hidsiz suyuqliklar; B) rangsiz, badbo'y suyuqliklar;
C) rangli kristall moddalar; D) rangsiz kristall moddalar;

3, c. 250

16. Etilmagniyxloridga suv, etil spirt, ammiak, metilamin, atsetamid singari "faol" vodorodi bor moddalar ta'sir ettirganda qanday uglevodorodlar hosil bo'ladi?

- A) faqat metan; B) metan va etan; C) faqat etan; D) faqat etilen.

19, кн. II, c. 390

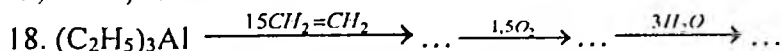


O'zgarishlarni amalga oshiring va B mahsulotining tuzilishini aniqlang.

- A) $CH_3-N(OH)-NH_2$ B) $CH_3-NH-NH_2-OH$

C) $\text{CH}_3\text{-N(OH)}_2$
19, кн. II, с. 397

D) $\text{CH}_3\text{-N=N-OH}$

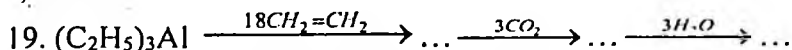


Reaksiyalar oxirgi mahsulotining formulasini ko'rsating:

A) $3\text{C}_{13}\text{H}_{27}\text{OH}$ B) $3\text{C}_{12}\text{H}_{25}\text{OH}$ C) $3\text{C}_{10}\text{H}_{21}\text{OH}$ D)

$3\text{C}_{14}\text{H}_{29}\text{OH}$

6, 206-b.



Reaksiyalar oxirgi mahsulotining formulasini ko'rsating:

A) $3\text{C}_{18}\text{H}_{37}\text{COOH}$ B) $3\text{C}_{17}\text{H}_{35}\text{COOH}$

C) $3\text{C}_{16}\text{H}_{33}\text{COOH}$ D) $3\text{C}_{14}\text{H}_{29}\text{COOH}$

6, 206-b.



Reaksiya mahsulotining tuzilishini aniqlang:

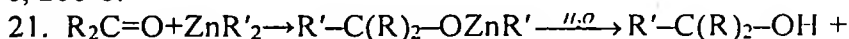
A) $\text{CH}_3\text{-Mg-CH}_2\text{-CH}_3$

B) $(\text{CH}_3)_2\text{Si}(\text{C}_2\text{H}_5)\text{-MgCl}$

C) $(\text{C}_2\text{H}_5)_2\text{Si}(\text{CH}_3)_2$

D) $(\text{C}_2\text{H}_5)_2\text{Si}(\text{CH}_3)\text{-MgCl}$

6, 206-b.



$\text{Zn(OH)}_2 + \text{R}'\text{H}$

Bu reaksiyalarni kim kashf etgan?

A) A.M. Butlerov;

B) A.M. Zaytsev;

C) E.E. Vagner;

D) V.E. Tishchenko;

19, кн. II, с. 399

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	B	8	D	15	D
2	D	9	D	16	A
3	D	10	A	17	D
4	D	11	A	18	B
5	C	12	C	19	D
6	D	13	B	20	B
7	A	14	C	21	B

XIII BOB. GETEROFUNKSIONAL BIRIKMALAR

Geterofunksional birikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari ga oid masala va mashqlar

1. a) etilatsetoatsetat (atsetosirka efir); b) metilatsetosirka efir; d) atsetoatsetaldegidning keton va yenol shakllarining tuzilish formulalarini yozing.

2. Atsetosirka efir anioni va natriy atsetosirka efirning rezonans strukturalarini yozing.

3. a) formilsirka kislota; b) atsetosirka kislota; d) α -metil- β -ketovalerian kislota; e) β -ketokapron kislota; f) β -ketoglutar kislota; g) formilakril; h) α -etil- β -ketomoy kislota; i) γ -ketovalerian kislota tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang.

4. Birikmalarning tuzilish formulalarini yozing: a) gidroksimalein kislota; b) α -gidroksi- β -xlorpropion kislota; d) α -gidroksi- β -xlorqahrabo kislota; e) α -metil- β -ketovalerian kislota; f) α -etil- β -ketomoy kislota; g) 4,6-dioksoheksan kislota.

5. $C_4H_6O_3$ tarkibli barcha izomer aldegid- va ketokislotalarning tuzilish formulalarini yozing. Xiral markazi bor stereoizomerlarning proeksion formulalarini keltiring va R,S konfiguratsiyalarini aniqlang.

6. Trigidroksiglutar kislota molekulasidagi asimmetrik va psevdosimmetrik uglerod atomlarini aniqlang. Uning stereoizomerlari proeksion formulalarini yozing. *Mezo*-shakllari qanday xossalari bilan bir-biridan farq qilishini ko'rsating.

7. Quyidagi kislotalarning kislotali xususiyatlarini solishtiring va farqlarini tushuntiring:

a) qahrabo va olma; - sirka va glikolik;

b) sut va propan; - sut va piruvat.

8. Karbon kislotalarning kislotali xususiyatlarini taqqoslang:

a) sirka, piruvat, sut;

b) olma, amber, oksaloatsetik;

d) sut, b-gidroksibutirik, propan;

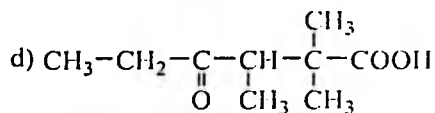
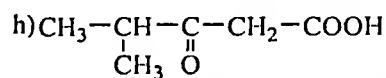
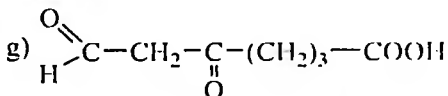
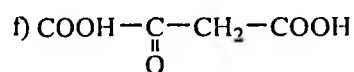
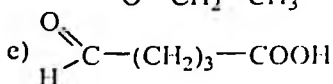
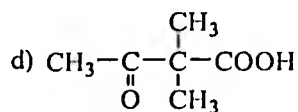
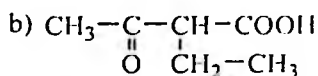
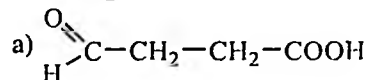
e) olma, oksaloatsetik, butan.

9. a) etilatsetoatsetat (atsetosirka efir); b) metilatsetosirka efir d) atsetoatsetaldegidning keton va yenol shakllarining tuzilish formulalarini yozing.

2. Atsetosirka efir anioni va natriyatsetosirka efirning rezonans strukturalarini yozing.

3. a) formilsirka kislota; b) atsetosirka kislota; d) α -metil- β -ketovalerian kislota; e) β -ketoka pron kislota; f) β -ketoglutar kislota; g) β -formilakril kislota; h) α -etil- β -ketomoy kislota; i) γ -ketovalerian kislota tuzilish formulalarini yozing va ularni sistematik nomenklaturaga ko'ra nomlang.

4. Quyidagi birikmalarni sistematik nomenklaturaga ko'ra nomlang:



5. a) γ -ketovalerian kislota metil efiri; b) β -ketomoy kislota amidi; d) atsetosirka kislota nitrili; e) β -ketovalerian kislota gidrazoni; f) γ -ketovalerian kislota oksimi; g) α, α' -dimetil- β -ketomoy kislota natriyli tuzilish formulalarini yozing.)

6. $\text{C}_4\text{H}_6\text{O}_3$ tarkibli barcha izomer aldehid- va ketokislotalarning tuzilish formulalarini yozing. Xiral markazi bor stereoizomerlar ning proyeksiya formulalarini keltiring. Konfiguratsiyalari (R, S) n aniqlang.

7. $\text{C}_4\text{H}_6\text{O}_3$ tarkibli hamma aldehid va ketonkislotalar izomerlari tuzilish formulasini yozing. Ularni nomlang.

8. Quyidagi kislotalarning tuzilish formulasini keltiring: a) formilsirka; b) α -ketonpropion; d) α -metil- β -ketomoy; e) α, α' -dimetil- γ -ketovalerian; f) β -formilakril; g) β -ketoglutar (atsetondikarbon). Ularni xalqaro nomenklatura asosida nomlang.

9. Birikmalarning tuzilish formulasini yozing: a) gliksil kislota metil efiri; b) pirouzum kislota nitrili; d) atsetosirka kislota metil efiri;

e) γ -keto-valerian kislota amidi; f) β -ketomoy kislota oksimi; g) atsetosirka efir fenilgidrazoni; h) atsetosirka kislota natriyli tuzi.

10. Quyidagi birikmalarda induktiv va mezomer effekt yordamida funksional gruppalarning o'zaro ta'sirini ta'riflang:

- a) OHC-COOH ; b) $\text{OHC-CH}_2\text{-COOH}$;
d) $\text{CH}_3\text{COCH}_2\text{COOH}$; e) $\text{CH}_3\text{COCH}_2\text{CH}_2\text{CH}_3$

Bu kislotalarning kislotaligini to'yingan bir asosli karbon kislotalarniki bilan solishtiring. Qeltirilgan birikmalarni kislotali xossasining kamayishi tartibida joylashtiring. Tarkibida aktiv metilen guruhi bo'lgan birikmalarni belgilang.

11. Quyidagi birikmalarni ularning CH-kislotaligini ortishi tartibida joylashtiring: a) atsetosirka efir; b) atseton; d) diatsetil; e) atsetilatseton; f) atsetonilatseton. Tushuntirish bering. Tuzilgan tartib yenollanishning yengillanish tartibiga mos keladimi? Bu birikmalarning keton va yenol shakllarini keltiring. "Keto-yenol tautomerlanishi" iborasiga ta'rif bering.

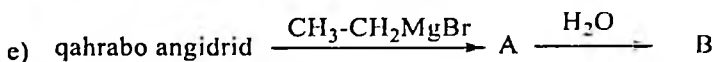
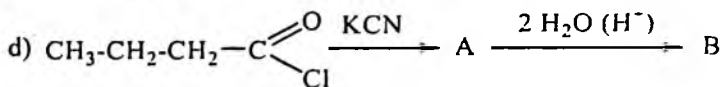
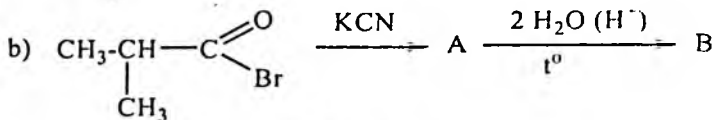
12. Atsetosirka efir misolida keto-yenol tautomer o'zgarishining mexanizmini ko'rib chiqing. Rezonans usulida oraliq hosil bo'ladigan mezomer anionning tuzilishini tasvirlang. Muvozanat holatida tautomer shakllarning tarkibi qanday? Nima sababdan kislota va asoslar keto-yenol tautomerlanishni tezlashtiradi?

13. Atsetosirka efir-yenol-shaklining sis- va trans-konfiguratsiyalarini tasvirlang. Qaysinisi va nima sababdan energiya Jihatidan maqbulroq? Nima sababdan bu yenol spirt bo'lishiga qaramay keto shakliga ($40\text{-}41^\circ\text{C}/266.6\text{ Pa}$) qaraganda qaynash harorati juda past ($33^\circ\text{C}/2666,6\text{ Pa}$).

14. β -dikarbonil birikmalarning tautomerlanish muvozanatiga qanday faktorlar ta'sir ko'rsatadi. Quyidagi savollarga javob bering:

a) nega atsetondagi yenol shakli 0,001 foizdan kam bo'lib, atsetilatsetonda 80 foizni tashkil etadi; b) nega atsetosirka efir oddiy sharoitda 7-8 foiz yenollanadi, lekin dimetilatsetosirka efir deyarli yenollanmaydi; d) qanday eritmada (spirt, geksan yoki efir) atsetosirka efir kuchliroq yenollanadi?

15.



aylanishlarni amalga oshiring.

16. Pirouzum kislotasini 4 xil usul bilan sintez qiling.

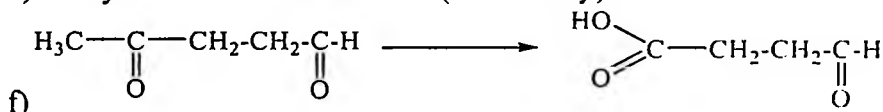
17. a) diketendan b) sirka etil efirdan atsetosirka efirni sintez qiling. b- reaksiyannig meanizmini yozing.

a) propion kislota \rightarrow 2-oksobutan (α -ketomoy) kislolaning etil efiri,

b) etilen oksid \rightarrow 3-oksopropan (formilpropion) kislota oksimi.

d) keten \rightarrow pirouzum (2-okopropan) kislota fenil gidrazoni.

e) n-moy kislota \rightarrow 2-oksobutan (α -ketomoy) kislota.



ni sintez qilish sxemasini tuzing. Hosil bo'ladigan oraliq maxsulotlarni nomlang.

18. Klayzen reaksiyasidan foydalanib, a) etil-3-okso-2-metil-pentanoat; b) dimetiloksaloatsetat; d) atsetilatsetonning olinish sxemalarini yozing.

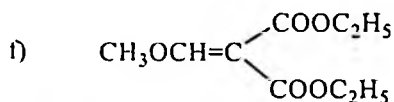
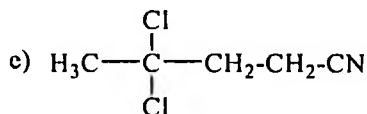
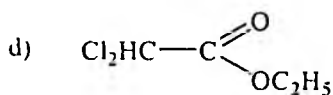
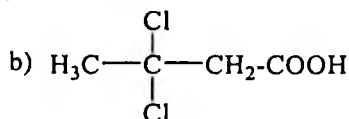
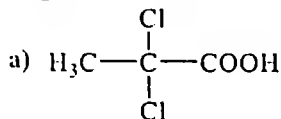
19. Atsetosirka efir va boshqa reagentlardan foydalanib, a) metilatsetosirka efir, b) izopropilatsetosirka efir olish reaksiyalari sxemalarini yozing.

20. a) β -oksivalerian kislota; b) 2-metil-3-gidroksipentan kislota; d) glikol kislolaning vodorod peroksid va temir tuzlari ishtirokida oksidlanishidan, qanday oksobirikmalar hosil bo'ladi?

21. $\text{C}_5\text{H}_{10}\text{O}_3$ tarkibli izomer gidrosikislotadarning oksidlanishidan hosil buladigan barcha aldevido- va ketokislotalarni

sistematik nomenklaturaga binoan nomlang.

22. Birikmalarning gidrolizlanish sxemalarini yozing, hosil bo'ladigan oksokislotalarni nomlang.



23. Quyidagi sintezlar sxemasini tuzing.

- | | | |
|-----------------|---|--------------------------------------|
| a) propen | → | 3- gidroksibutan kislota |
| b) propannitrit | → | 2- gidroksibutan kislota |
| d) etilen oksid | → | 3-oksopropan kisota oksimi |
| e) keten | → | 2-oksopropan kislota fenilgidrazoni. |

24. Kroton va izokroton kislotalarni kaliy permanganatning suyultirilgan eritmasi bilan ishqoriy muhitda oksidlaganda qanday gidroksikislotalar hosil bo'ladi? Bu gidroksikislotalarning proeksion formulalarini yozing, xiral markazlari konfiguratsiyalarini aniqlang. Ularning qaysilari eritro- va qaysilari treo- izomerlar?

25. $\text{C}_5\text{H}_{10}\text{O}_3$ tarkibli izomer gidroksikislotalarning oksidlanishidan qanday aldeido- va ketokislotalar hosil bo'ladi?

26. $\text{C}_5\text{H}_{10}\text{O}_3$ tarkibli optik faol modda ko'k lakmusni qizartiradi, HCl bilan reaksiyaga kirishib, $\text{C}_5\text{H}_9\text{O}_2\text{Cl}$ tarkibli moddani, RCl_5 ta'sirida $\text{C}_5\text{H}_8\text{OCl}_2$ birikmani, suyultirilgan sulfat kislota bilan qizdirilganda esa $\text{C}_4\text{H}_8\text{O}$ tarkibli aldegidni hosil qiladi. $\text{C}_5\text{H}_{10}\text{O}_3$ tarkibli moddaning tuzilishini aniqlang.

27. Dialkilatsetosirka efrining ketonli parchalanishidan 3-etil-2-pentanon hosil bo'ldi. Bu efrining tuzilishini aniqlang va uning kislotali 2-metilbutanal bilan sianogidrin sintezini yozing. Olingan birikma uchun reaksiyalarni quyidagilar bilan yozing: 1) HCl; 2) SOCl_2 ; 3) NH_3 , t °; 4) t °.

28. Piruvat kislotasining quyidagilar bilan reaksiyasini yozing: a) HCN / OH^- ; b) NaOH ; v) NH_2OH ; d) $\text{CH}_3\text{OH} / \text{H}^+$.

29. α -aminobutan kislota sintezi va ushbu kislotaning quyidagi reagentlar bilan reaksiyasi sxemasini yozing: a) CH_3COCl ; 2) $\text{CH}_3\text{OH} / \text{H}^+$; 3) NH_3 , t° ; 4) HClO_4 ; 5) 3 CH_3I .

30. Quyidagi birikmalarning tuzilish formulalarini yozing: a) 3-oksobutan kislota; b) 3-gidroksipentan kislota; v) 3.3-dimetil-2-oksobutan kislota; d) 3-metil-4-gidroksibutan kislota; e) 2-metil-4-oksopentan kislota; f) 3-gidroksipentadi kislota; g) gliksil kislota etil efiri. Ro'yxatdagi birikmalar orasida optik izomeriya hodisasi bo'lishi mumkin bo'lganlarni belgilang.

31. Atsetosirka efir atsilli hosilasining ketonli parchalanishidan gekсандion-2,4 hosil bo'ldi. Uning tuzilishini aniqlang va kislotali parchalanish reaksiyasi tenglamasini yozing.

32. Monoalkilatsetosirka efirning kislotali parchalanishidan sirka va n -moy kislotalar hosil bo'ldi. Monoalkilatsetosirka efirning tuzilishini aniqlang va uning ketonli parchalanish reaksiyasi tenglamasini yozing.

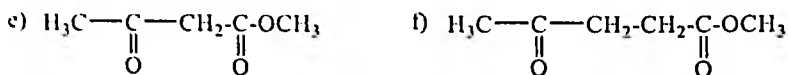
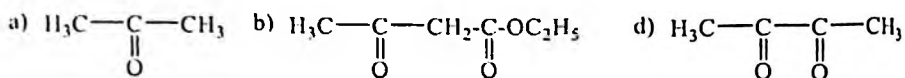
33. Gliksil kislotada karboksil va al'degid guruhlari bir-biriga qanday ta'sir qiladi? Bu ta'sir uning qaysi xossalari namoyon bo'ladi?

34. Gliksil kislota bilan a) kumush - oksidning ammiakdagi eritmasi; b) sianid kislota; d) natriy gidrosulfid; e) giroksilamin; f) mo'l olingan o'yuvchi natriyning suvdagi 40% li eritmasi orasida boradigan reaksiyalarning sxemalarini yozing. Hosil bo'ladigan mahsulotlarni nomlang.

35. Pirouzum kislota bilan sirka kislota va astseton xosalarini taqqoslang.

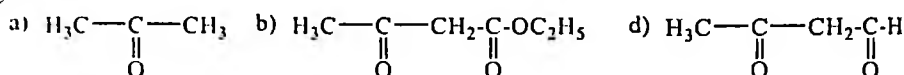
36. Pirouzum kislotaga a) nitrat kislota (qizdirilganda); b) suyultirilgan sulfat kislota (qizdirilganda); d) konsentrlangan sulfat kislota (qizdirilganda); e) katalizator ishtirokida molekulyar vodorod; f) sianid kislota, g) gidroksilamin; h) gidrazin i) natriy gidrosulfid ta'sir ettirilganda boradigan reaksiyalar sxemalarini yozing.

37. Molekulalardagi elektron siljishlarni hisobga olgan holda a) gliksil kislota; b) formilsirka kislota; v) 3-oksobutan kislota; g) 4-oksopentan kislota kichik kuchning ortib borishi tartibida joylashtiring.



birikmalarni CH-kislotaligining oshib borish tartibida joylashtiring.

38. Bu birikmalarning oson yenollanishi qanday tartibda o'zgaradi?



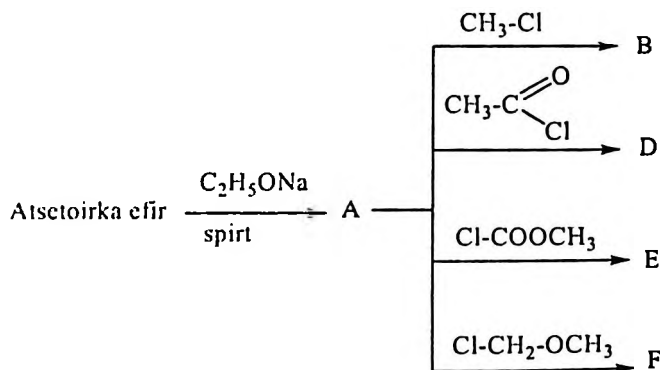
39. Karbonilli birikmalarning (sof suyuqliklarning) qaysi birida yenol tautomeriyaning miqdori eng ko'p va qaysi birida eng kam?

40. Atsetosirka efir yenol shaklining geometric izomerlari formulalarini yozing. Ularning qaysi biri energetic jihatdan barqaror?

41. Atsetosirka efir qaysi erituvchida kuchli yenollashgan. Spirt, geksan, efir yoki sirka kislotadami?

42. Atsetosirka efirda keton va yenol shakllarning nisbatini aniqlash uchun unga barqaror rang hosil bo'lguncha brom qo'shiladi. Sarf bo'lgan bromning miqdoriga (mol soniga) qarab, yenol shaklning miqdori aniqlanadi (Kurt Meyer usuli). 1 mol atsetosirka efirga 160 g bromning 1 l to'rtxlorli uglerod eritmasi qo'shiladi. a) reaksiya xona haroratida sekin olib borilganda shu eritmaning qancha hajmi qo'shilganda barqaror rang (ortiqcha bromning rangi) hosil bo'ladi. b) reaksiyani - 5°C gacha sovutish bilan tez o'tkazilgandach?

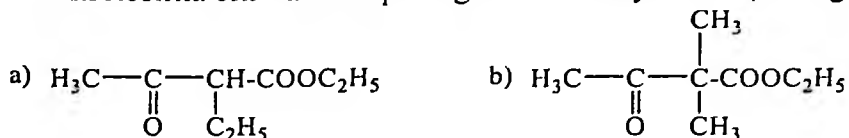
43.



o'zgarishlarni amalga oshiring.

B, E, F va D mahsulotlarni hosil bo'lish reaksiyalarida natriyatsetosirka efirning yengil anioni qanday xossalarni namoyon qiladi?

44. Atsetosirka efir va boshqa reagentlardan foydalanib, uning



gomologlarini sintez qiling.

45. a) metiletilatsetosirka efir; b) izopropilatsetosirka efir; d) metilizobutilatsetosirka efir; e) n-propilatsetosirka efir; f) atsetilatsetosirka efirning ketonli va kislotali parchalanish reaksiya sxemalarini yozing va ular qanday sharoitda o'tkaziladi?

46. Atsetosirka efir va boshqa reagentlardan foydalanib, a) 2-geksanon; b) 4-metil-2-pentanon; d) 3-metil-2-pentanon; e) 3-etil-2-pentanon; f) atsetonilatseton, g) atsetilatseton; i) 2,7-oktandionni sintezlash sxemalarini keltiring.

47. Atsetosirka efir va boshqa reagentlardan foydalanib:

a) valerian kislota; b) izomoy kislota; d) glutar kislota; e) 2-etilpentan kislota; f) qahrabo kislota; g) adipin kislotani sintezlash sxemalarini yozing.

48. Dialkilatsetosirka efirning kislotali parchalanishidan sirka va 2-propilpentan kislotalar hosil bo'ladi. Dialkilatsetosirka efir tuzilishini aniqlang va uning ketonli parchalanish reaksiyasi tenglamasini yozing.

49. Monoalkilatsetosirka efirning ketonli parchalanishidan metil propil keton hosil bo'ladi. Monoalkilatsetosirka efirning tuzilishini aniqlang; va uning kislotali parchalanish reaksiyasi tenglamasini yozing.

50. Atsetosirka efirning atsilli hosilasi kislotali gidroliz qilinganda β -ketomoy va sirka kislotalar hosil bo'ladi. Atsilli hosilaning tuzilishini aniqlang va uning ketonli parchalanish reaksiyasi tenglamasini yozing.

Geterofunksional birikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. $C_4H_6O_3$ tarkibli oksokislotalarning nechta optik faol izomeri bo'lishi mumkin?

- A) oltita B) beshta C) to'rtta D) ikkita

6, 170- va 175-b; 24, 212- va 216-b.

2. Pirouzum kislota olish uchun qaysi gidroksikislota oksidlash kerak?

- A) 3-gidroksipropan kislota B) sut kislota
C) α -gidroksimoy kislota D) β -gidroksimoy kislota

4, 384-b.

3. Uzum kislota $KHSO_4$ ishtirokida qizdirilganda qanday kislota hosil bo'ladi?

- A) atsetosirka kislota; B) 2-oksobutan kislota;
C) 3-oksobutan kislota; D) pirouzum kislota;

3, c. 639

4. Klyayzen reaksiyasi (kondensatsialanishi)dan foydalanib atsetilatsetonni olish uchun natriy etilat ishtirokida qaysi moddalarni reaksiyaga kiritish kerak?

- A) etilformiat bilan etilatsetatni;
B) etilformiat bilan atsetonni;
C) etiloksalat bilan etilformiatni;
D) etilatsetat bilan atsetonni;

15, c. 888

5. Quyidagi oksokislotalarning qaysi biri eng kuchli kislota?

- A) gliksil kislota; B) formilsirka kislota;
C) 3-oksobutan kislota; D) 4-oksopentan kislota;

4, 382-b.

6. Birikmalardan qaysi biri eng kuchli CH- kislota?

- A) $CH_3-CO-CH_3$ B) $CH_3-CO-(CH_2)_2-CO-$
 OC_2H_5
C) $CH_3-CO-CH_2-CO-CH_3$ D) $CH_3-CO-(CH_2)_2-CO-$
 CH_3

4, 382-b; 15, c. 894-897

7. Karbonil birikmalar (sof suyuqliklar) ning qaysi birida yenol tautomerning miqdori eng kam bo`ladi?

- A) atsetoatsetaldegidda; B) atsetilatsetonda;
 C) atsetonilatsetonda; D) atsetonda;

15, c. 895

8. Atsetosirka efir qaysi anorganik tuzning eritmasi ta'sirida qizil-binafsha rang beradi?

- A) FeCl₂ B) CuSO₄ C) MgCl₂ D) FeCl₃

4, 385-b.

9. Atsetosirka efirda keton va yenol tautomerlarning foiz nisbati qanday?

- A) 50% keton, 50% enol; B) 60% keton, 40% enol;
 C) 70% keton, 30% enol; D) 93% keton, 7% enol;

2, τ.2, c. 229

10. Qanday moddalar bilan qizdirilganda atsetosirka efir kislotali parchalanadi?

- A) konsentrlangan xlorid kislotasi bilan;
 B) konsentrlangan sulfat kislotasi bilan;
 C) ishqor va kislotalarning suyultirilgan eritmalari bilan;
 D) ishqorning konsentrlangan eritmalari bilan;

4, 388-b; 8, c. 309; 11, c. 451

11. Atsetilatsetosirka efirning ketonli parchalanishidan hosil bo`ladigan organik modda qanday nomlanadi?

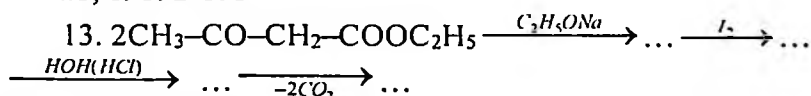
- A) pentanon-2; B) pentanon-3;
 C) pentandion-2,4; D) pentandion-2,3;

15, c. 889-890

12. Metiletilatsetosirka efirga o'yuvchi kaliyning spirdagi konsentrlangan eritmasini ta'sir ettirganda qanday karbon kislotalarning tuzi hosil bo`ladi?

- A) faqat sirka kislotaning; B) faqat 2-metilbutan kislotaning;
 C) faqat propion kislotaning; D) sirka va 2-metilbutan kislotalarning

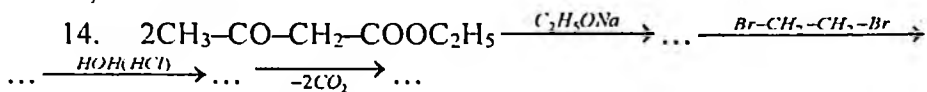
15, c. 892-893



Reaksiyalarning oxirgi mahsuloti tuzilishini aniqlang.

- A) $\text{CH}_3\text{-CO-CH}_2\text{-CO-CH}_2\text{-CH}_3$ B) $\text{CH}_3\text{-CO-CH}_2\text{-CH}_2\text{-CO-CH}_3$
 C) $\text{CH}_3\text{-CO-CH}_2\text{-CH}_2\text{-CH}_2\text{-CH}_3$ D) $\text{CH}_3\text{-CH}_2\text{-CO-CH}_2\text{-CH}_2\text{-CH}_3$

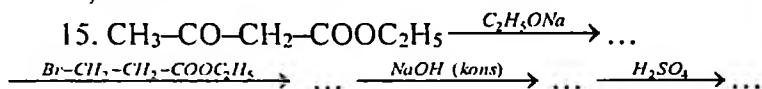
15, c. 889-892



Reaksiyalar oxirgi mahsuloti tuzilishini aniqlang

- A) $\text{CH}_3\text{-CO-(CH}_2\text{)}_2\text{-CO-CH}_3$ B) $\text{CH}_3\text{-CO-(CH}_2\text{)}_4\text{-CO-CH}_3$
 C) $\text{CH}_3\text{-CO-(CH}_2\text{)}_5\text{-CH}_3$ D) $\text{CH}_3\text{-CO-(CH}_2\text{)}_5\text{-CO-CH}_3$

15, c. 889-892



Reaksiyalar oxirgi mahsuloti sifatida qanday karbon kislota hosil bo'ladi?

- A) valerian kislota; B) kapron kislota;
 C) glutar kislota; D) adipin kislota;

15, c. 892-893

Testlarning javoblari

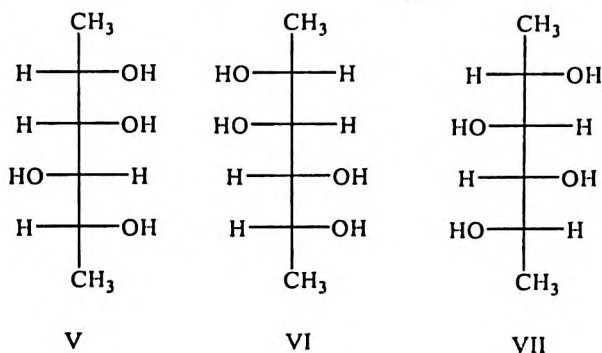
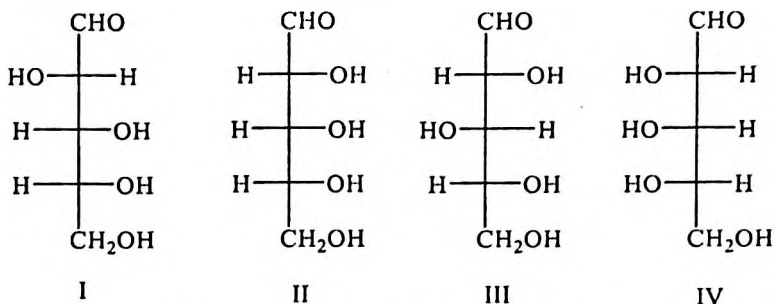
Test	Javob	Test	Javob	Test	Javob
1	B	6	C	11	A
2	C	7	D	12	B
3	A	8	B	13	D
4	C	9	C	14	C
5	D	10	A	15	C

XIV BOB. UGLEVODLAR

Uglevodlarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalriga oid masala va mashqlar

1. Aldotetrozalarning nechta stereoizomer shakllari bor? Ularning proeksion formulalarini yozing.

2. Quyidagi diastereomerlarning qaysilari bir-biriga epimer hisoblanadi?



3. β-D-galaktopiranozaga quyidagi reagentlarni ta'sir ettirilganda boradigan reaksiyalar tenglamalarini yozing va hosil bo'ladigan organik moddalarni nomlang: a) gazsimon HCl ishtirokida CH₃OH; b) sirka anhidrid, Δ; d) C₂H₅NH₂.

4. Tetrozalarga kuchli oksidlovchilarni ta'sir ettirib, nechta stereoizomer gidroksidikarbon kislota olish mumkin? Bu kislotalarning barchasi optik faol bo'ladimi?

5. Metilgalaktozidni dimetilsulfat bilan metillashdan hosil bo'lgan mahsulotga xlorid kislota bilan ishlov berildi. Olingan birikmaning oksidlanishidan trimetoksiglutar kislota hosil bo'ldi. Metilgalaktozid

molekulasidagi kislorod ko'prikchasi holatini aniqlang. Tegishli reaksiyalar tenglamalarini yozing.

6. Nega D-glyukozani NaBH_4 bilan qaytarganda bitta olti atomli spirt – D-glyutsit (sorbit) hosil bo'ladi-yu, D-fruktozaning qaytarilishidan ikkita spirt D-glyutsit va D-mannit hosil bo'ladi?

7. $\text{C}_6\text{H}_{12}\text{O}_6$ tarkibli modda kumush ko'zgu reaksiyasini beradi. Uni suyultirilgan sulfat kislota bilan qizdirilganda α -metilfurfurol, ehtiyotlik bilan oksidlaganda esa tetragidroksikapron kislota hosil bo'ladi. $\text{C}_6\text{H}_{12}\text{O}_6$ tarkibli moddaning tuzilishini aniqlang.

8. Stereoizomer tetrozalar qaytarilganda nechta stereoizomer to'rt atomli spirtlar hosil bo'lishi mumkin.

9. Trisaxarid kislotali gidroliz qilinganda 2:1 nisbatda D-glyukoza va D-galaktoza, to'liq metillab so'ngra gidroliz qilinganda esa 2,3,6-tri-O-metilgalaktoza, 2,3,4,6-O-metilglyukoza va 2,3,4-tri-O-metilglyukoza hosil bo'ldi. Trisaxaridning sistematik nomenklatura bo'yicha nomini ayting.

10. α -1,6-glikozidli bog' tutgan glyupiranozidoglyukoza tuzilish formulalarini yozing. Bu disaxarid Feling reaktivi ta'sirida oksidlanadimi?

11. To'liq etillangan sellyuloza qanday olinadi? Reaksiya tenglamasini yozing.

12. Glyukozaning ikki yoqlama kimyoviy funksiyaga egaligini qaysi reaksiyalar tasdiqlaydi.

13. Aldegidlarga xos bo'lgan qaysi reaksiya glyukozaga xos emas.

14. Glyukoza va saxarozani farqlashga imkon beradigan reaksiyani ko'rsating.

15. Kartoshkada kraxmalning massa ulushi 20% ga teng. Unum 75% ni tashkil etsa 1620 kg kartoshkadan qancha glyukoza olish mumkin?

16. Saxaroza gidroliz qilinganda 270 kg glyukoza va fruktoza olindi. Saxarozaning qanday massasi gidroliz qilingan?

17. Qaysi reaksiyalar yordamida glyukozada: a) aldegid guruhi b) beshta gidroksil guruhi borligini isbotlash mumkin?

18. Glyukoza va fruktozaning ikkita optik izomerlarini formulalarini ko'rsating.

19. Elektron tasavvurlar asosida glyukozaning aldegid shaklidan xalqali shaklga o'tish jarayonini tushuntiring.

20. Ksiloza monosaxaridi ribozadan 3-S atomidagi gidroksil guruhining o'rni bilan farq qiladi. Ksilozaning chiziqli shakldan siklik shakllarga o'tish sxemasini ko'rsating.

21. $C_6H_{12}O_5Br_2$ modda gidrolizlanganda suvli eritmada A va V furanozalar aralashmasini hosil qilib, A furanozaning fragmenti saxaroza tarkibiga kiradi. A va B moddalarning formulalarini yozib, tegishli reaksiyalarning tenglamalarini kltiring.

22. $C_5H_{10}O_4$ tarkibli modda kumush ko'zgu reaksiyasini berib, vodorod xlorid katalizatorligida metanol bilan monometil efir hosil qiladi va vodorod iodid bilan fosfor qo'shib qizdirilsa 2-iodpentanga aylanadi. Boshlang'ich moddaning mumkin bo'lgan formulasini va o'zgarishlarda hosil bo'lgan moddalarning formulalarini keltiring. Shu moddadan 2-yodpentanning hosil bo'lish reaksiyasining tenglamasini yozing.

23. Galaktoza glyukozaning izomeri bo'lib 4-uglerod atomidagi gidroksil guruhining o'rni bilan farq qiladi. Ikkita α -galaktoza qoldig'idan 1-4 glikozid bog'lanish orqali hosil bo'lgan disaxaridning tuzilish formulasini ko'rsating. Bu disaxaridning vodorod xlorid ishtirokida metil spirti bilan hosil qiladigan mahsulotining tuzilish formulasini yozing. Bu modda kumush ko'zgu reaksiyasiga kirishadimi? Kerakli reaksiya tenglamalarini yozing.

24. Qanday moddalarga a) uglevodlar; b) monosaxaridlar; d) disaxaridlar; e) polisaxaridlar; f) aldovalar; g) ketozalar; h) aldopentozalar; i) ketogeksozalar deyiladi. Ularga misollar keltiring.

25. a) D- riboza; b) D- arabinoza; d) L- ksiloza; e) L-liksoza; f) D-alloza; g) D-altroza; h) L- guloza; i) L- idoza; j) D- taloza; k) L-ribuloza; l) D- ksiloza; m) L- psikozaning atsiklik (ochiq zanjirli) tuzilish formulalarini yozing. Ulardagi har bir xiral uglerod atomi konfiguratsiyasini R yoki S bilan belgilang.

26. a) α - D- ribopiranoza; b) β - D- fruktofuranoza; d) glukozaning gidrat shakli; e) a- D- ksilofuranoza; f) a- D- mannofuranoza; g) β -D-glukopiranoza; h) 2- dezoksi-2-amino- β -D-galaktopiranozaning tuzilish formulalarini yozing.

27. D-mannozaning uchta tautomer shakli (aldegidli) va ikkita piranozali tuzilish formulalarini yozing va ularni, nomlang.

28. α -D-glukoza uchun Xeuzrs formulasini va Rivzning konformatsion formulasini yozing.

29. a) β -D(+)-glukopiranoza; b) β -D-mannopiranoza; d) α -D-galaktopiranozaning barqaror konformatsiyalarini chizing.

30. Aldotetrozalar uchun nechta stereoizomer shakllar bo'lishi mumkin? Bu stereoizomerlarning proeksion formulalarini yozing.

31. Sellobiozaga vodorod xlorid ishtirokida metil spirti ta'sir qilindi. Qaysi modda hosil bo'ladi? Bu modda kumush oksidining ammiakli eritmasi bilan reaksiyaga kirishadimi?

32. Glyukoza bilan mis(II)-gidroksidining isitilganda boradigan reaksiyasining tenglamasini yozing.

33. Quyidagi o'zgarishlarni amalga oshirishga imkon beradigan reaksiyalarning tenglamalarini yozing: sellyuloza glyukoza glkozaning pentaatsetati.

34. Boshqa uglerod saqlagan reaktivlardan foydalanmay saxarozadan glyukoza pentaatsetatini hosil qiling.

35. 1 kg glyukoza va 1 kg kraxmalning qaysi biridan ko'proq etil spirti olish mumkin? Javobingizni hisoblash olib bormay asoslang.

36. Quyidagi reaksiyalar tenglamalarini yozing: a) pentozalarni suyultirilgan sulfat kislotaga bilan qizdirib, furfuroli olish; b) D-sorbitning D-glyukoza gacha oksidlanishi; d) D-mannozaning oksidlanishi va qaytarilishi.

37. Reaksiya tenglamalarini yozing:

a) saxaroza + sirka anhidrid (CO_2) \longrightarrow ...
b) maltoza + sianid kislotaga \longrightarrow ...
d) laktoza + gidroksilamin \longrightarrow ...

38. «A» modda shirin ta'mli, rangsiz suvda yaxshi eriydigan, kristall modda. «A» modda gidrolizlanganda bir xil molekulyar massaga ega bo'lgan ikki modda hosil bo'lib, ulardan biri «B» kumush ko'zgu reaksiyasiga kirishadi va «C» moddaga aylanadi. «A», «B» va «C» moddalarning mumkin bo'lgan formulalarini ko'rsatib, tegishli reaksiyalarning tenglamalarini yozing.

39. «A» modda oq rangli suvda erimaydigan kukun bo'lib, qaynoq suvda bo'kib kleyster hosil qiladi. Bu modda gidrolizlanganda oxirgi mahsulot «B» modda bo'lib, u sut kislotaga bakteriyalari ishtirokida ikki yoqlama kimyoviy funktsiyaga ega va sut achiganda to'planadigan «C» moddani hosil qiladi. «A», «B» va «C» moddalarning formulalarini hamda tegishli reaksiyalarning tenglamalarini yozing.

40. «A» modda suvda ham, odatdagi erituvchilarda ham erimaydigan tolasimon modda bo'lib, nitrat kislota ta'sirida «B» murakkab efirini, sirka angidridi ta'sirida esa «C» murakkab efirini hosil qiladi. «A» moddaning, «B» va «C» moddalarning mumkin bo'lgan formulalarini va tegishli reaksiyalarning tenglamalarini yozing.

41. Quyida keltirilgan moddalardan qaysilari juft-juft bo'lib reaksiyaga kirisha oladi: saxaroza, chumoli kislota, suv, mis(II)-gidroksidi?

42. Glyukozadan olingan $C_6H_{14}O_6$ tarkibli modda natriy bilan reaksiyaga kirishib $C_6H_8Na_6O_6$ tarkibli moddani, mis(II)-gidroksidi bilan ko'k-binafsha rangli kompleks birikmani, kislotali muhitda mo'l sirka kislota bilan $C_{18}H_{26}O_{12}$ tarkibli moddani hosil qiladi. Bu birikmaning formulasini va tegishli reaksiyalarning tenglamalarini yozing.

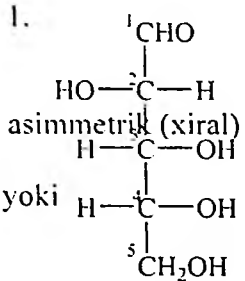
43. Birta reaktiv yordamida glitsirin, sirka aldegidi, sirka kislota va glyukozalarni qanday aniqlash mumkin?

44. Organik moddalardan faqat glyukozadan foydalanib tarkibida 5 tadan uglerod atomi saqlagan ikkita murakkab efir hosil qiling.

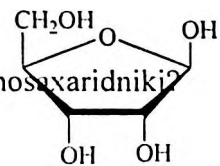
45. 18 grami 23,2 g kumush oksidi bilan reaksiyaga kirisha oladigan, uni yondirishda talab qilinadigan kislorodning hajmi ajraladigan karbonat angidridning hajmiga teng bo'ladigan kislorod saqlagan organik moddaning formulasini toping.

46. 2,68 g sirka aldegidi va glyukoza aralashmasi suvda eritilib, olingan eritmaga 35,87 ml 34% li (zichligi 1,4 g/ml) kumush nitrat eritmasidan tayyorlangan kumush oksidining ammiakdagi eritmasi qo'shildi. Sal qizdirganda hosil bo'lgan cho'kma fil'trlab olinib, nitrat kislota bilan neytrallangan filtratga mo'l kaliy xlorid eritmasi qo'shildi. Bunda 5,74 g cho'kma tushdi. Boshlang'ich aralashmadagi moddalarning massa ulushlarini toping. Tegishli reaksiya tenglamalarini yozing.

Uglevodlarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

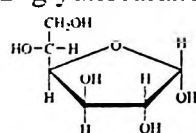
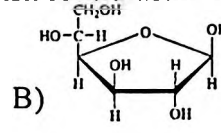
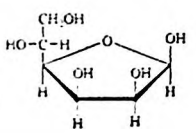
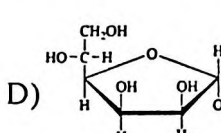
1.  tuzilishli pentozaning har bir uglerod atomi konfiguratsiyasini (R yoki S) aniqlang.
- A) 2R, 3S, 4R B) 2R, 3R, 4R
C) 2S, 3R, 4R D) 2R, 3S, 3S

4. 12-13-b; 6, 183- va 186-b.

2.  tuzilishli formula qaysi monosaxaridniki?
- A) α -D(-)-ribofuranoza;
B) β -D(-)-ribofuranoza;
C) α -D(+)-ksilopiranoza;
D) β -D(+)-ksilopiranoza.

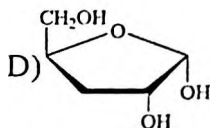
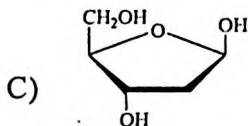
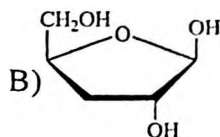
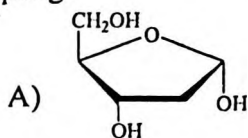
3. c. 506

3. β -D-glyukofuranozaning tuzilish formulasini ko'rsating.

- A)  B) 
- C)  D) 

4. 393-b.

4. 2-dezoksi- β -D(-) ribofuranozaning tuzilish formulasini aniqlang.



4, 401-b.

5. α -D-glyukopiranoza va β -D-glyukopiranoza bir-biriga nisbatan qanday izomer?

A) enantiomer;

B) epimer;

C) metamer;

D) anomer;

4, 394-395-b; 15, c. 951-954

6. D - glyukoza va L- glyukoza bir-biriga nisbatan qanday izomer?

A) enantiomer;

B) epimer;

C) metamer;

D) anomer;

4, 392-393-b; 15, c. 949

7. D-glyukoza va D-mannoza bir-biriga nisbatan qanday izomer?

A) enantiomer;

B) epimer;

C) metamer;

D) anomer;

3, c. 512

8. Uglevodlar konfiguratsiyasini aniqlashda glitserin aldegidni standart modda sifatida kim tavsiya etgan?

A) Ruff;

B) Fisher;

C) Biyo;

D) Rozanov.

15, c. 949

9. Aldogeksozalarning (ochiq zanjirli shaklda) fazoviy izomerlari soni nechta?

A) o'n ikkita;

B) o'n to'rtta;

C) o'n oltita;

D) yigirmata.

4, 393-b.

10. Atsiklik aldogeksozalarning barcha fazoviy izomerlaridan nechtasi L- qatorga mansub?

A) o'ntasi;

B) sakkiztasi;

C) oltitasi;

D) to'rttasi:

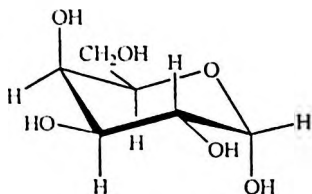
3, c. 508-509; 4, 393-b.

11. Keto shakldagi ketogeksozalarning barcha fazoviy izomerlaridan nechitasi D-qatorga kiradi?

A) o'ntasi; B) sakkiztasi; C) oltitasi; D) to'rttasi;

3. c. 510

12.



tuzilishli formula qaysi piranozaniki?

- A) α -D- fruktopiranoza;
B) α -D- glyukopiranoza;
C) α -D- galaktopiranoza;
D) α -D- mannopiranoza;

3. c. 514; 4, 402-b.

13.



tuzilishli formula qaysi piranozaniki?

- A) α -D- arabopiranoza; B) α -D- liksopiranoza;
C) α -D- ksilopiranoza; D) α -D- ribopiranoza.

4. 400-b.

13. A.M. Butlerov 1861 yilda formaldegidga kalsiy gidroksidni ta'sir ettirib olgan monosaxaridlar aralashmasiga qanday nom bergan edi?

A) levuloza; B) dekstroza; C) metilenitan; D) invertaza.

19, KH. I. c. 434

14. Saxarozaning suvli kislotaga yoki invertaza fermenti ta'sirida gidrolizlanishidan qanday monosaxarid (lar) hosil bo'ladi?

A) faqat L(-)- glyukoza; B) faqat D-(+)-fruktoza;
C) faqat D-(+)- mannoza; D) D-(+)- glyukoza va D(-)- fruktoza.

4, 407-b; 8, c. 343; 15, c. 971

15. Qaysi disaxaridning gidrolizlanishidan faqat D-(+)- glyukoza hosil bo'ladi?

A) (+)- saxarozaning; B) (+)- laktozaning;

C) (+)- sellobiozaning;

D) (+)- maltozaning.

4, 405-b; 15, c. 965

16. D-glyukozaning konsentrlangan nitrat kislota bilan oksidlaganda hosil bo'ladigan birikmani nomlang.

A) glyukon kislota;

B) glyukar (qand) kislota;

C) glyuuron kislota;

D) glyukouron kislota.

15, c. 937

17. D-glyukozaning bromli suv bilan oksidlaganda hosil bo'ladigan birikma qanday nomlanadi?

A) glyukon kislota;

B) glyukar (qand) kislota;

C) glyuuron kislota;

D) glyukouron kislota

15, c. 937

18. Monosaxaridlardan qaysi biri eng shirin?

A) mannoza;

B) glyukoza;

C) fruktoza;

D) galaktoza.

4, 403-b.

19. Monosaxaridlarning qaysi biri bromli suv ta'sirida oksidlanmaydi?

A) D-arabinoza;

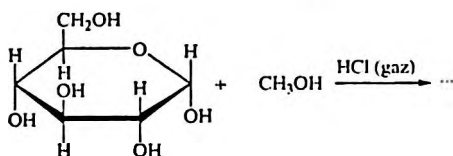
B) D-riboza;

C) D-mannoza;

D) D-fruktoza.

15, c. 937

20.



Reaksiya natijasida qanday organik modda hosil bo'ladi?

A) 2-0-metil- α -D-glyukopiranoza;

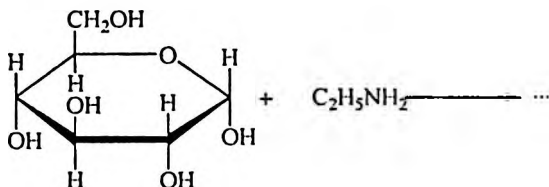
B) 3-0-metil- α -D-glyukopiranoza;

C) 4-0-metil- α -D-glyukopiranoza;

D) metil- α -D-glyukopiranozid;

4, 398-b; 19, кн. I, c. 443-444

21.



Reaksiya mahsuloti qanday nomlanadi?

- A) N-etil-β-D-glyukopiranozilamin;
- B) 2-N-etil-β-D-glyukopiranoza
- C) 3-N-etil-β-D-glyukopiranoza
- D) 4-N-etil-β-D-glyukopiranoza;

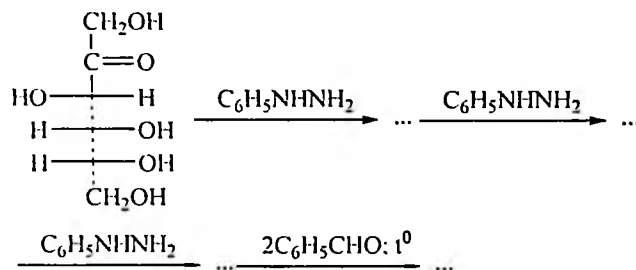
22, c. 204-205

22. Qanday uchta monosaxarid bir xil ozazon hosil qiladi?

- A) D-alloza, D-altroza, D-idoza;
- B) D-glyukoza, D-mannoza va D-fruktoza;
- C) D-galaktoza, D-taloza va D-idoza;
- D) D-fruktoza, D guloza va D-riboza.

4, 297-b; 19, кн. I, c. 448

23.

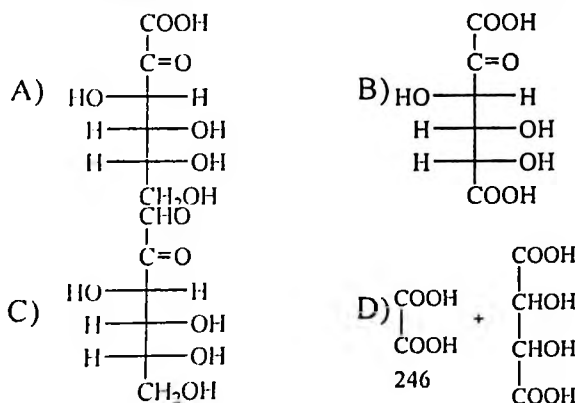


Reaksiyalarning oxirgi mahsuloti qanday nomlanadi?

- A) ozazon;
- B) ozon;
- C) fenilozazon;
- D) ketozon;

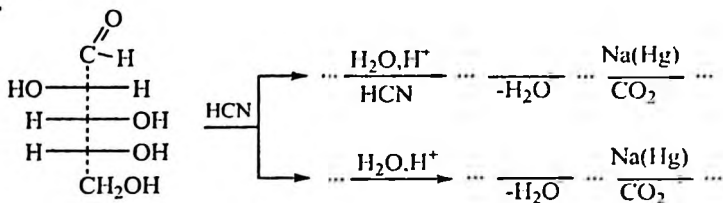
4. 397-b; 6, 189-b; 15, c. 938-939

24. Fruktozani kuchli oksidlovchi bilan oksidlaganda hosil bo'ladigan organik birikma (lar) ning tuzilishini aniqlang.



24, c. 233

25.

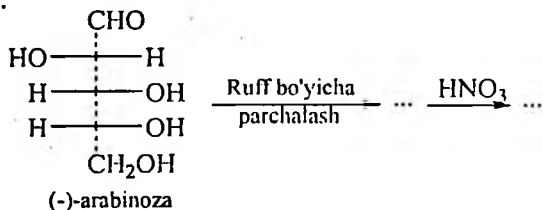


Reaksiya oxirgi mahsulot (lar) i sifatida qanday monosaxaridlar hosil bo'ladi?

- A) bir-biriga enantiomer ikkita aldogeksoza;
- B) bir-biriga enantiomer ikkita ketogeksoza;
- C) bir-biriga diastereomer (epimer) ikkita aldogeksoza;
- D) bir xil aldogeksoza;

15, c. 939-940

26.



Reaksiyalarning oxirgi mahsuloti qanday vino kislota?

- A) D(+)-vino kislota;
- B) L(-)-vino kislota;
- C) uzum kislota;
- D) optik faol bo'lmagan mezovino kislota;

15, c. 947

27. D-glyukozaning toza tayyorlangan eritmasi qutblangan nur tekisligini $+160^\circ$ ga buradi. Vaqt o'tishi bilan bu qiymat $+52.5^\circ$ gacha o'zgaradi. Bu o'zgarish qanday ataladi?

- A) inversiya;
- B) mutarotatsiya;
- C) epimerlanish;
- D) tautomerlanish;

4, 395-396-b.

28. Glyukozaning spirtli bijg'ishidan qanday spirt olinadi?

- A) propil spirt;
- B) izopropil spirt;
- C) etil spirt;
- D) metil spirt

8, c. 153

- A) maltoza; B) laktoza;
C) saxaroza; D) sellobioza;
4, 407-408-b.

38. Qaysi disaxaridning eritmasida mutarotatsiya kuzatilmaydi?

- A) maltoza; B) laktoza;
C) saxaroza; D) sellobioza

3, c. 519; 4, 407-b.

39. Qaysi disaxaridning gidroliziga inversiya deyiladi?

- A) saxaroza; B) maltoza;
C) laktoza; D) sellobioza.

4, 407-b; 15, c. 971

40. Disaxaridlarning qaysi biri ikki molekula α -D-glyukopiranozaning yarimatsetal gidroksillari hisobiga hosil bo'lgan?

- A) maltoza; B) laktoza;
C) tregaloza; D) sellobioza.

3, c. 517; 6, 195-b; 11, c. 639

41. Qaysi disaxarid kumush ko'zgu reaksiyaga kirishmaydi?

- A) maltoza; B) laktoza;
C) tregaloza; D) sellobioza;

3, c. 517; 6, 195-b; 11, c. 639

42. Disaxaridlarning qaysi biri gidroksilamin bilan reaksiyaga kirishmaydi?

- A) saxaroza; B) laktoza;
C) maltoza; D) sellobioza;

3, c. 517

43. Tregaloza gidroliz qilinganda qanday monosaxarid(lar) hosil bo'ladi?

- A) ikki molekula α -D-glyukopiranoza;
B) ikki molekula β -D-glyukopiranoza;
C) α -D-galaktopiranoza va α -D-glyukopiranoza
D) α -D-glyukopiranoza va β -D-fruktofuranaza;

6, 192- va 195-b; 11, c. 639

44. Sellyulozani o'yuvchi ishqorlarning konsentrlangan eritmalari bilan ishlov berganda alkalitsellyuloza $[C_6H_7O_2(OH)_2ONa]_n$ hosil bo'ladi? Bu jarayon qanday nomlanadi?

- A) mutarotatsiya; B) inversiya;
C) merserizatsiya; D) alkogolizatsiya;

19, кн. 1, c. 481

45. $[C_6H_7O_2(OH)(ONa)_2]_n + 3nC_2H_5Cl + 2nNaOH \rightarrow \dots$
Reaksiya natijasida hosil bo'ladigan sellulozaning oddiy efiri tuzilishini aniqlang.

- A) $[C_6H_7O_2(OH)(OC_2H_5)_2]_n$ B) $[C_6H_7O_2(OC_2H_5)_3]_n$
C) $[C_6H_7O_2(OC_2H_5)_2]_n$ D) $[C_6H_7O_2(OH)_2(OC_2H_5)_2]_n$

46. Sellyuloza erituvchilarning qaysi birida eriydi?

- A) xloroformda; B) spirtida;
C) Shveytser reaktivida; D) efirda.

18, 597-b; 19, KH. 1, c. 480

47. Sellyuloza trinitrati $[C_6H_7O_2(ONO_2)_3]_n$ ni olish uchun sellulozaga qanday reagent (lar) ta'sir ettiriladi?

- A) kons. HNO_3 B) nitrat va sulfat kislotalar aralashmasi.

- C) suyultirilgan HNO_3 D) azot (IV)-oksidi;

3, c. 521; 4, 412-b; 18, 508-b.

48. $[C_6H_7O_2(OH)_3]_n + 3n(CH_3CO)_2O \xrightarrow{ZnCl_2} \dots$

Reaksiya mahsuloti qayerda ishlatiladi?

- A) tutunsiz porox tayyorlashda;
B) sellofan olishda;
C) atsetat ipak, yonmaydigan kino va fotoplyonka olishda;
D) selluloid ishlab chiqarishda;

3, c. 521; 4, 412-b.

49. Sellyuloza trinitrati $[C_6H_7O_2(ONO_2)_3]_n$ 14,1% azot saqlashi lozim. Amalda 12,5-13,5% azoti bor mahsulot olinadi. Bu mahsulot texnikada qanday nom bilan yuritiladi?

- A) kolloksilin; B) selluloid;
C) pirosksilin; D) tripleks;

3, c. 521; 4, 412-b.

50. Inulin ($C_6H_{10}O_5$)_n yod ta'sirida rang hosil qiladimi?

- A) ko'k rang hosil qiladi; B) binafsha rang hosil qiladi;
C) sariq rang hosil qiladi; D) rang hosil qilmaydi;

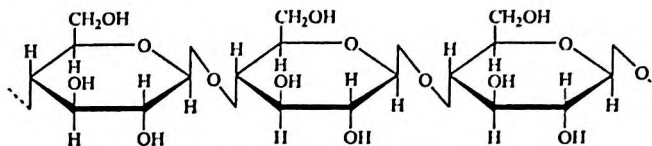
18, 596-b.

51. Inulinning fermentlar yoki kislotalar ta'sirida gidrolizlanishidan oxirgi mahsulot sifatida qanday monosaxarid hosil bo'ladi?

- A) D-glyukoza; B) D-galaktoza; C) D-fruktoza; D) D-mannoza;

18, 596-b; 19, KH. 1, c. 477

52.

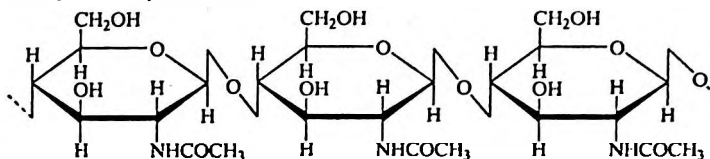


Sxemada qaysi polisaxaridning makromolekulasi tasvirlangan?

- A) kraxmal; B) inulin; C) glikogen; D) selluloza;

8, c. 348; 18, 597-b.

53.



tuzilishli formula qaysi polisaxarid(lar) niki?

- A) xitin; B) gemitsellyulozalar;
C) kamedlar; D) dekstranlar;

18, 600-b; 19, кн. 1, с. 483

54. Gemitsellyulozalar gidrolizlanganda qanday monosaxaridlar hosil bo`ladi?

- A) faqat D-arabinoza;
B) faqat D-ksiloza;
C) faqat D-galaktoza;
D) D-ksiloza, D-arabinoza, D-galaktoza, ba'zan D-mannoza va D-glyukoza.

19, кн. 1, с. 483

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	B	19	C	37	D
2	D	20	D	38	D
3	D	21	D	39	C
4	D	22	C	40	B
5	B	23	D	41	D
6	A	24	D	42	D
7	C	25	A	43	A
8	D	26	D	44	C
9	D	27	D	45	D
10	D	28	B	46	D
11	A	29	C	47	B
12	A	30	D	48	B
13	D	31	A	49	C
14	C	32	D	50	B
15	B	33	B	51	C
16	A	34	C	52	B
17	D	35	C	53	D
18	D	36	A	54	C

XV BOB. AMINOKISLOTALAR VA OQSILLAR

Aminokislotalar va oqsillarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari oid masala va mashqlar

1. Peptid bog' hosil bo'ladigan reaksiyaga misol keltiring.
2. Uglarod skeleti bilan farq qiladigan izomer aminokislotalarga misollar keltiring.
3. Uchta aminomoy kislotaning tuzilish formulalarini keltiring.
4. Birida optik izomeri bo'lgan va ikkinchisida bo'lmagan ikkita aminokislotaning formulasini keltiring.
5. a) kislota xossalari b) asos xossalari ustun bo'lgan aminokislotalarning formulalarini keltiring.
6. Sistein, alanin va lizin aminokislotalaridan necha xil tripeptid olish mumkin? Mumkin bo'lgan tripeptidlardan ikkitasining formulasini keltiring.
7. Quyidagi aminokislotalarning tuzilish formulalarini yozing va ularni sistematik nomenklaturaga binoan nomlang: a) α -aminoglutar kislota; b) γ -aminokapron kislota; d) α -aminoizokapron kislota; e) α -amino- β , γ , δ -trimetil-kapron kislota; f) α,ϵ -diaminokapron kislota; g) δ -amino- α -metilvalerian kislota.
8. $C_5H_{11}O_2N$ tarkibli aminokislotaning strukturaviy va fazoviy izomerlarining tuzilish formulalarini yozing. Optik faol izomerlarini R,S-nomenklaturada nomlang.
9. $C_6H_{11}O_2N$ tarkibli aminokislota qizdirilganda $C_{10}H_{20}O_2N_2$ tarkibli birikma hosil bo'ldi. Aminokislota va undan hosil bo'lgan moddaning tuzilishini aniqlang.
10. Peptidlarning tuzilish formulalarini yozing: a) H-Ala-Ser-Met-OH; b) alanilglitsilserilfenilalanin; d) serilalanilglitsilfenilalanilvalin
11. Tripeptid to'liq gidrolizlanganda serin, fenilalanin va alanin, qisman gidrolizlanganda esa fenilalanilserin va serilalanin hosil bo'ldi. Tripeptidning tuzilishini aniqlang.
12. Amfoter xossalarga ega bo'lgan $C_4H_9O_2N$ tarkibli birikma nitrit kislota bilan reaksiyaga kirishganida azot ajralib chiqadi, metanol bilan $C_5H_{11}O_2N$ moddani, qizdirilganda esa $C_8H_{14}O_2N_2$ birikmani hosil qiladi. $C_4H_9O_2N$ birikmaning tuzilishini aniqlang.

13. «A» modda suvda eriydigan kristall modda. «A» moddaga bromid kislota ta'sir ettirilganda «B» tuz, kalsiy gidroksid ta'sir ettirilganda «C» tuz hosil bo'ladi. «A» modda yonganda yonishga yordam bermaydigan ikki gaz hosil bo'lib ulardan biri ohakli suvni loyqalantirmaydi. «A», «B» va «C» moddalarni aniqlang. Ularning formulalarini va tegishli reaksiyalarning tenglamalarini yozing.

14. Tarkibida oltita uglerod atomi va uchta kislorod atomi saqlagan aminokislota qoldiqlaridan tashkil topgan ikkita tabiiy dipeptidlarning formulalarini yozing.

15. Tarkibida 4 ta kislorod atomiga 3 ta oltingugurt atomi to'g'ri keladigan tabiiy tripeptidning formulasini yozing.

16. $C_9H_{11}NO_2$ tarkibli «A» modda xlorid kislota bilan $C_9H_{12}ClNO_2$ tarkibli modda, natriy gidroksid bilan $C_9H_{10}NNaO_2$ tarkibli moddani hosil qiladi. «A» modda propanol-2 bilan ta'sirlashsa $C_{12}H_{17}NO_2$ birikma hosil bo'ladi. «A» moddaning formulasini aniqlab, tegishli reaksiyalarning tenglamalarini yozing.

17. $C_5H_9NO_4$ tarkibli modda natriy gidroksid bilan $C_5H_7NNa_2O_4$ tarkibli moddani, xlorid kislota bilan $C_5H_{10}ClNO_4$ tarkibli moddani, etanol bilan sulfat kislota ishtirokida $C_9H_{17}NO_4$ tarkibli moddani hosil qiladi. Bu birikmaning mumkin bo'lgan formulalaridan birini va tegishli reaksiyalarning tenglamalarini yozing.

18. 33 g dipeptid gidrolizlanganda faqat bir modda – aminokislotalardan birining vodorod xloridli tuzi hosil bo'ldi. Uning massasi 55,75 g ga teng. Dipeptidning tuzilishini aniqlang.

19. 48 g dipeptidning ishqoriy gidrolizida faqat bir modda – 66,6 g aminokislotalardan birining natriyli tuzi hosil bo'ladi. Dipeptidning tuzilishini aniqlang.

20. 37,8 g tripeptid gidrolizlanganda faqat bir modda – 45 g aminokislota hosil bo'ladi. Tripeptidning tuzilishini aniqlang.

21. Molekulyar massasi 307 g/mol bo'lib, 13,7% azot saqlagan «A» peptid qisman gidrolizlanganda ikkita «B» va «C» dipeptidlar hosil bo'ldi. 0,480 g «B» peptid qizdirganda 11,2 ml 0,536 M li xlorid kislota bilan reaksiyaga kirisha oladi. 0,708 g «C» peptid namunasi 15,7 ml 2,1% li (zichligi 1,02 g/ml) kaliy gidroksid eritmasi bilan to'liq reaksiyaga kirishadi. «A» peptidning formulasini aniqlab, nomlang.

22. $C_7H_{12}N_2O_5$ tarkibli «A» birikma kaliy gidroksid bilan $C_5H_7NO_4K_2$ birikmani, nitrat kislota bilan qizdirilmaganda $C_7H_{13}N_3O_8$

birikmani hosil qiladi. «A» moddaning tuzilishini aniqlab, reaksiyalarning tenglamalarini yozing.

23. Uchta dipeptidning aralashmasi to'liq gidrolizi natijasida tirozin, glitsin, alanin, serin va glutamin kislotalar hosil bo'ldi. Dipeptidlardan biri 6,36 g KOH ning to'yingan eritmasi bilan (KOH ning eruvchanligi 100 g suvda 112 g ga teng) va 9,83 ml 12,0% li nitrat kislota (zichlig 1,068 g/ml) tuz hosil qila oladi. Bu dipeptid mo'l natriy gidrokarbonat bilan ta'sirlashganda 896 ml (n.sh.) gaz ajraladi. Dipeptidning tuzilishini va massasini toping.

24. Dipeptidlar aralashmasi to'liq gidrolizi natijasida lizin, sistein, alanin, serin va glutamin kislotalar kislotalar hosil bo'ldi. Dipeptidlardan biri yondirilib, yonish mahsulotlari ketma-ket suvsiz mis sulfati joylangan nay va mo'l miqdordagi ohakli suv orqali o'tkazilganda cho'kma hosil bo'lib, 67,2 ml yutilmagan gaz qoldi. Cho'kmaga mo'l miqdorda xlorid kislota ta'sir ettirilib, ajralgan gaz mo'l vodorod sulfid bilan aralashtirilib qizdirildi. Bunda 0,192 g qattiq modda qoldi. Dipeptidning mumkin bo'lgan formulasini topib, suvsiz mis sulfat solingan nayning massasi qanday o'zgarganligini hisoblang.

25. Tripeptidlar aralashmasi gidroliz qilinganda lizin, glitsin, alanin, fenilalanin va tirozin hosil bo'ldi. Tripeptidlardan biri yondirilib yonish mahsulotlari ohakli suv orqali o'tkazilganda 25,2 g cho'kma olindi va 1,008 l (n.sh) yutilmagan gaz qoldi. Shu tripeptidning avvalgidek massasi gidrolizlanganda hosil bo'ladigan aminokislotalarning massasi boshlang'ich moddanikidan 0,648 g ko'p bo'ladi. Tripeptidning formulasini va massasini toping.

26. Aminsirka kislotaning gomologik qatoriga tegishli ikki aminokislotadan hosil bo'lgan dipeptidga 50 g 16% li natriy gidroksid eritmasi qo'shib qizdirildi. Gidroliz tugagandan hosil bo'lgan eritmadagi natriyli tuzlarning molyar konsentratsiyalari 0,2 mol/l dan bo'lib, NaOH niki esa 0,4 mol/l ga tenglashdi. Eritma bug'latilgandan keyingi quruq qoldiqning massasi 15,8 g keldi. Tuzlarning birida natriyning massa ulushi 18,4% ga teng bo'lsa, dipeptidning tuzilishini aniqlab massasini toping.

27. V.M. Rodionov usuli bilan β -aminovalerian va β -aminoenant kislotalarni sintez qiling. Reaksiya tenglamalarini yozing.

28. Shtreker reaksiyasi yordamida α -aminomoy va α -aminoizovalerian kislotalarni qaysi aldegidlardan olish mumkin? Reaksiya tenglamalarini yozing.

29. $C_2H_3O_2Cl$ tarkibli modda izomerlari orasidan $C_4H_8N_2O_4Ca$ tarkibli moddani hosil qilish imkonini beradiganini tanlang.

30. $C_3H_5O_2Cl$ tarkibli modda izomerlari orasidan $C_3H_9NO_6S$ tarkibli moddani hosil qilish imkonini beradiganini tanlang.

31. $C_2H_3O_2Cl$ tarkibli modda izomerlari orasidan $C_2H_6N_2O_5$ tarkibli moddani hosil qilish imkonini beradiganini tanlang.

32. $C_4H_8O_3N_2$ tarkibli modda izomerlari orasidan ikki bosqichda $C_2H_6N_2O_5$ tarkibli moddani hosil qilish imkonini beradiganini tanlang.

33. $C_6H_{12}O_3N_2$ tarkibli modda izomerlari orasidan ikki bosqichda $C_3H_6NO_2K$ tarkibli moddani hosil qilish imkonini beradiganini tanlang.

34. $C_{10}H_{16}O_7N_2$ tarkibli modda izomerlari orasidan bir-ikki bosqichda $C_5H_{10}O_4NCl$ tarkibli moddani hosil qilish imkonini beradiganini tanlang.

35. Alaninning (2-aminopropion kislota) amfoterligini tasdiqlaydigan reaksiya tenglamalarini yozing.

36. $C_3H_7NO_2$ tarkibli ikkita moddaning tuzilish formulalarini yozing. Tanlagan moddalarigizni bir-biridan qanday farqlash mumkin?

37. α -Aminopropion kislota bilan quyidagi reagentlar orasida boradigan reaksiyalarning tenglamalarini yozing: a) xlorid kislota; b) o'yuvchi natriyning suvdagi eritmasi; d) atsetil xlorid; e) CH_3Br ; f) $NaNO_2 + HCl$; g) $Cu(OH)_2$; h) $C_2H_5OH + HCl$.

38. Har bir bosqichda unum 75% ni tashkil etsa, 15 g sirka kislotadan ikki bosqichda necha gramm 15% li aminosirka kislota eritmasini olish mumkin?

39. 150 g 5% li aminosirka kislota eritmasiga 100g 5% li kaliy gidroksid eritmasi qo'shildi. Olingan eritmadagi moddalarning massa ulushlarini toping.

40. 16,3 g α -aminokislota va birlamchi amin aralashmasi (mol nisbatlari 3:1) 20 g 36,5% li xlorid kislota bilan reaksiyaga kirisha oladi. Moddalarning tarkibidagi uglerod atomlari soni teng bo'lsa, aralashmaning sifat va miqdoriy tarkiblarini (grammlarda) aniqlang.

41. Metilamin, aminosirka kislota va etilatsetat-ning 20 grammi 4,93 l (n.sh) vodorod xlorid bilan reaksiyaga kirisha oladi. 40 g shunday aralashma 300 ml 1,4 M li kaliy gidroksid bilan reaksiyaga kirishadi. Boshlang'ich aralashmadagi moddalarning massa ulushlarini toping.

Aminokislotalar va oqsillarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. $C_4H_9O_2N$ tarkibli aminokislotalarning strukturaviy izomerlari soni nechta?

- A) to'rtta; B) beshta; C) oltita; D) yettita.

6, 229- va 232-b.

2. $C_4H_9O_2N$ tarkibli aminokislotalarning nechta optik faol izomeri bor?

- A) ikkita; B) uchta; C) to'rtta; D) oltita.

6, 229- va 232-b.

3. Aminokislotalardan qaysi birining molekulasida xiral markaz mavjud emas?

- A) α -aminomoy kislota; B) α -amino- β -gidroksimoy kislota;
C) β -aminomoy kislota; D) β -aminopropion kislota.

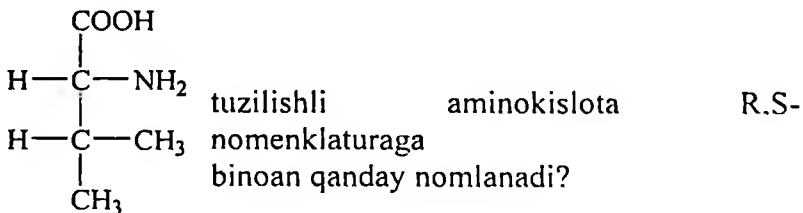
4, 416-b.

4. Quyidagi qaysi α -aminokislotalarning optik izomeri yo'q?

- A) glitsin (aminosirka kislota);
B) L-alanin (α -aminopropion kislota)
C) L-valin (α -aminoizovalerian kislota);
D) L-leytsin (α -aminoizokapron kislota).

4, 416-b.

5.



- A) (2S)-2-amino-3-metilbutan kislota;

C) asosan L-qator, qisman D-qatorga; D) faqat L-qatorga:
2, т.2, с. 508; 8, с. 312; 19, кн.1, с. 484

10. Sintetik usullar bilan olinganda qanday α -aminokislotalar hosil bo`ladi?

- A) D(+)-; B) L(+)-; C) D(-)-;
D) optik faol bo`lmagan ratsemik α -aminokislotalar.

3, с. 616

11. α -Aminokislotalar qaysi erituvchida yaxshi eriydi?

- A) petroley efirda; B) dietil efirda;
C) diizobutil efirda; D) suvda.

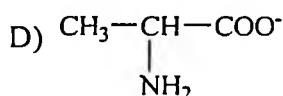
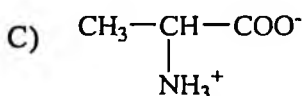
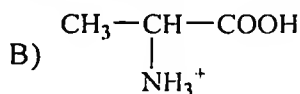
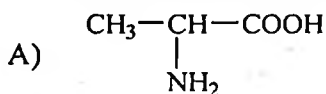
4, 421-b; 18, 603-b.

12. Birikmalarning qaysi biri nisbatan kuchli kislota?

- A) propion kislota;
B) moy kislota;
C) izomoy kislota;
D) α -aminopropion kislota.

6, 237-b.

13. Formulalarning qaysi birida ichki tuz (betain) tasvirlangan?



3, с. 618-619; 4, 421-b.

14. α -Aminokislotalar suvdagi eritmalarida pH muhitiga qarab qanday ko`rinish(lar)da uchrashi mumkin?

- A) faqat betain; B) faqat aminokislota;
C) faqat anion; D) betain, aminokislota, anion va kation.

3, с. 618-619

15. Aminokislotalar neytral eritmalarining IQ-spektrlarida erkin karboksil guruhi uchun xos tebranishlar bormi? Bo`lsa qaysi sohalarda kuzatiladi?

- A) 1650-1670 cm^{-1}
B) 1940-1970 cm^{-1}

C) 1990-1995 sm^{-1}

D) erkin karboksil guruhi uchun xos tebranishlar yo`q.

4. 421-b.

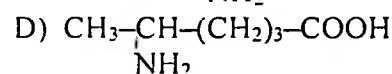
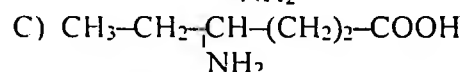
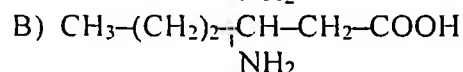
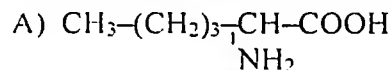
16. Aminokislotalar neytral eritmalarining IQ-spektrlarida erkin aminoguruh uchun xos tebranishlar bormi? Bo`lsa qaysi sohalarda kuzatiladi?

A) 3120-3150 sm^{-1} B) erkin aminoguruh uchun xos tebranishlar yo`q

C) 3190-3195 sm^{-1} D) 3210-3240 sm^{-1}

4. 421-b.

17. $\text{C}_6\text{H}_{13}\text{O}_2\text{N}$ tarkibli aminokislota qizdirilganda $\text{C}_{12}\text{H}_{22}\text{O}_2\text{N}_2$ tarkibli birikma hosil bo`ldi. Aminokislota tuzilishini aniqlang.



6. 231- va 239-b.

18. Qanday moddalar oddiy oqsillar deyiladi?

A) gidrolizlanganda aminokislota va yog`larga ajraladigan;

B) gidrolizlanganda aminokislotalar va uglevodlarga ajraladigan;

C) gidrolizlanganda aminokislotalar va anorganik moddalarga ajraladigan;

D) gidrolizlanganda faqat aminokislotalarga ajraladigan;

4. 430-b.

19. Oqsil tarkibida quyidagi birikmalarning qaysi biri doimo uchraydi?

A) oksiprolin;

B) valin;

C) γ -aminomoy kislota;

D) β -alanin.

20. Oqsil gidrolizi jarayonida qanday o`zgarish ro`y beradi?

A) erkin karboksil guruhlarining soni kamayadi.

B) erkin aminoguruhlarining soni oshadi.

C) eritma pH-i keskin kamayadi;

D) peptid bog`lar hosil bo`ladi.

21. Oqsillarning molekulyar massalari qanchagacha bo`ladi?

A) 1 dan 500 gacha; B) 500 dan 1000 gacha:
C) 1000 dan 5000 gacha; D) 5000 dan bir necha o`n
milliongacha.

22. Moddalarning qaysi qatorida faqat murakkab oqsillar keltirilgan?

- A) albuminlar, gistonlar, xromoproteidlar;
- B) globulinlar, albuminlar, protaminlar;
- C) nukleoproteidlar, xromoproteidlar, lipoproteidlar;
- D) fosfoproteidlar, nukleoproteidlar, protaminlar.

4, 430-431-b.

23. Oqsillar tarkibidagi azotning o`rtacha foiz miqdori nechaga teng?

- A) 50% B) 16% C) 26% D) 2.5%

24. Uchta aminokislota qoldig`idan iborat bo`lgan peptidning nechta izomeri bo`lishi mumkin?

- A) to`rtta; B) beshta; C) oltita; D) sakkizta;

25. Peptid bog` ($\text{--}\overset{\text{O}}{\parallel}\text{C--NH--}$) da uglerod bilan azot orasidagi masofa necha nanometrغا teng?

- A) 0,146; B) 0,151; C) 0,124; D) 0,132;

26. Izoelektrik nuqtada oqsil molekulasida qanday xossaga ega bo`ladi?

A) anodga qarab harakatlanadi; B) katodga qarab harakatlanadi.

- C) elektroneytral hisoblanadi; D) gidrolizlanadi.

27. Oqsillar denaturatsiyaga uchraganda ularning molekularida qanday o`zgarishlar sodir bo`ladi?

- A) faqat to`rtlamchi strukturasi buziladi;
- B) uchlamchi va to`rtlamchi strukturasi buziladi;
- C) ikkilamchi, uchlamchi va to`rtlamchi strukturasi buziladi;
- D) faqat birlamchi strukturasi buziladi;

28. Oqsillar gidrolizining oxirgi mahsulotlarini ko`rsating.

- A) peptidlar aralashmasi;
- B) β ,D-aminokislotalar aralashmasi;
- C) β ,L-aminokislotalar aralashmasi;
- D) α ,L-aminokislotalar aralashmasi

29. Oqsillar birlamchi strukturasi hosil bo`lishida qanday bog`lar asosiy rol o`ynaydi?

- A) vodorod bog`lar; B) peptid bog`lar;
 C) disulfid bog`lar; D) disulfid va vodorod bog`lar.

30. Oqsillar ikkilamchi strukturasi hosil bo`lishida qanday bog`lar muhim ahamiyatga ega?

- A) ion bog`lar; B) peptid bog`lar;
 C) kovalent bog`lar; D) vodorod bog`lar.

31. Qaysi aminokislotaning D₂O eritmasidagi PMR-spektrida bitta signal qayd etilgan?

- A) α-aminopropion kislota B) β-aminopropion kislota
 C) aminosirka kislota D) α-aminomoy kislota

17. c. 89

32. Reagentlarning qaysi biri nukleofil yoki elektronodonor?

- A) Cl⁻ B) H⁺ C) :NH₃ D) AlCl₃

4. 30-31-b.

33. Reagentlarning qaysi biri elektrofil yoki elektronoakseptor?

- A) BF₃ B) H-Ö-H C) :C≡N: D) :Ö⁻-H

4. 30-31-b.

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	D	12	C	23	D
2	B	13	D	24	A
3	A	14	B	25	D
4	C	15	D	26	D
5	D	16	B	27	C
6	B	17	D	28	D
7	B	18	D	29	D
8	C	19	D	30	B
9	D	20	C	31	A
10	A	21	D	32	D
11	D	22	B	33	D

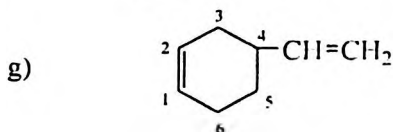
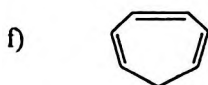
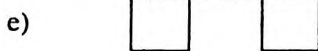
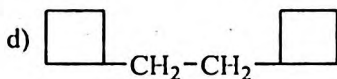
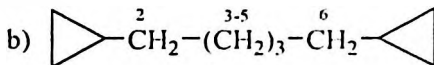
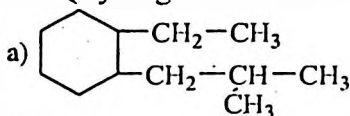
XVI BOB. SIKLIK BIRIKMALAR

Siklik birikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalarga oid masala va mashqlar

1. Siklopropan molekulasidagi C—C va C—H bog'lar qaysi orbillarning qopanishidan hosil bo'ladi? Siklopropanning atom orbital modwli (τ, π -bog'lanish) bilan τ -bog'lar yordamida bog'lanishini taqqoslang.

2. Birikmalarning tuzilish formulalarini yozing: a) 1,2 -dimetil-siklopentan; b) 1-metil-2-izopropilsiklopentan; d) 1-etil-3-propilsiklobutan; e) 1,1-dimetilsiklopropan; f) etiltetrametilen; g) izopropilsiklopropan; h) 2-metil-2-metil-1,3-siklopentadiyen; i) 3-(2-metil-1-propenil)-1-siklogeksan; j) metilensiklopentadiyen (fulven); k) siklopentilsiklogeksan; l) 1-metil-6-allil-1,3-siklogeksadiyen; m) 2,6-dimetil-1,3-siklogeksadiyen.

3. Quyidagi birikmalarni nomlang:



4. a) mentan (1-metil-4-izopropilsiklogeksan); b) limonene ($\Delta^{1,8(9)}$ -mentadiyen); d) α -terpinen ($\Delta^{1,3}$ -mentadiyen); e) γ -terpinen ($\Delta^{1,4}$ -mentadiyen); f) mentol; g) α -pinen; h) β -pinen; i) kamfora; j) adamantan; k) (2)-(sikloeykozan)-sikloeykozan-ketenan; l) (2)-(1.10-diarildekan)-sikloeykozan-rotaksanning tuzilish formulalarini yozing.

5. Sikloalkanlarda izomeriyaning qanday turlari uchraydi? Aniq misollar bilan tushuntiring.

6. C_6H_{12} tarkibli barcha izomer sikloalkanlarning (siteroizomerlarning emas) tuzilish formulalarini yozing va ularni nomlang.

7. Quyidagi birikmalarning qaysilari geometric izomerlar holida uchrashi mumkin?

a) xlorciklopropan; b) 1,1 dixelorsiklopropan; d) 1,3-dimetilsiklobutan; e) 1,2-dibromsiklopentan; f) 1,2 dixelorsiklopropan. Sis- va trans- izomerlarning tuzilish formulalarini yozing.

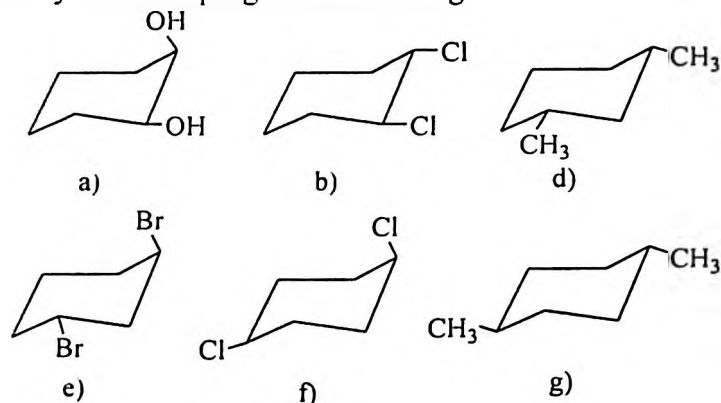
8. Quyidagi birikmalarning tuzilish formulalarini yozing:

a) sis-siklopropan-1,2-dikarbon kislota; b) trans-siklopropan-1,2-dikarbon kislota; d) sis-1,2-dimetilsiklopropan; e) tarans-1,2-siklopentandiol; f) sis-siklopentan-1,3-dikarbon kislota; g) tarans-siklopentan-1,3-dikarbon kislota.

Bu izomerlarning qaysilari mezo-forma va qaysilari enantiomerlar holida uchrashini ko'rsating. Enantiomerlarning formulalarini keltiring. 9. Bir-biridan ikkita qo'sh bog'ning turlicha joylashishi bilan farq qiladigan metilsiklogeksadiyen izomerlarining tuzilish formulalarini yozing va ularni nomlang.

10. Siklogeksanning kreslo va vanna konformatsiyalarini tasvirlang. Kreslo konformatsiyasidagi aksial va ekvatorial C-H bog'larni ko'rsating.

11. Siklogeksan hosilalarining konfiguratsiyalarini va konformatsiyalarini aniqlang. Ularni nomlang.



12. 1,2 va 1,4- dialmashigan siklogeksanlarda trans-izomerlar sis-izomerlarga nisbatan barqaror, 1,3- dialmashiganlarda esa sis- izomerlar nisbatan barqaror bo'ladi. Nima uchun?

13. 1,2-geksandiolning: a) konfiguratsion diastereomerlarini; b) konformatsion enantiomerlarini; v) konfiguratsion enantiomerlarini; g) konformatsion diastereomerlarini tasvirlang.

14. Quyidagi birikmalarning tuzilish formulalarini yozing:

a) sis-1-izopropil-3-metilsiklogeksan;
b) trans-1- izopropil-3-metilsiklogeksan;

- d) sis-1-etil-4-uchlamchibutilsiklogeksan;
- e) sis-1,1,3,4-tetrametilsiklogeksan;
- f) sis-1,2-siklopentandiol;
- g) trans-1,4-dixlorsiklogeksan.

15. C_7H_{16} tarkibli sikloalkanlar nechta strukturaviy izomer holida uchrashi mumkin? Ularning tuzilish formulalarini yozing va nomlang.

16. Quyidagi birikmalarning qaysilari enantiomerlar holida mavjud bo'la olmaydi?

- a) 1,1-dibromsiklobutan; b) trans-1,2-dibromsiklopropan;
- d) sis-1,2-dixlorsiklopentan; e) sis-1,4-dibromsiklogeksan;
- f) trans-1,4-dibromsiklogeksan, g) trans-1,3-dibromsiklobutan;
- h) trans-1,2-dixlorsiklopentan .

17. a) siklopropan; b) siklobutan; d) metilsiklobutan; e) metilsiklopropan; f) etilsiklopropan; g) 1,2-dimetilsiklobutan; h) 1,3-dimetilsiklobutanni qaysi birikmalardan G. G. Gustavson sintezi (digalogenli hosilalar spirtli eritmada rux kukuni bilan qizdiriladi) bilan olish mumkin?

18. Quyidagi birikmalarga natriy ta'sir ettirilganda qanday sikloalkanlar hosil buladi?

- a) 2,4-dixlorpentan; b) 1,5- dibromgeksan; d) 1,4-dibromgeksan; e) 2,5- dibromgeksan.

19. Alifatik dikarbon kislotalarning a) adipin kislotaning kalsiyli tuzi; b) pimolin kislotaning bariyli tuzi; d) azelain kislotaning toriyli tuzi piroliz qilinganida qanday birikmalar hosil bo'ladi?

20. Alkenlarga karbenlarni biriktirish usulida a) metilsiklopropan; b) pentilsiklopropan; d) sis-1,2-dimetilsiklopropan; e) trans- 1,2- dimetil siklopropanni sintezlash reaksiyalari tenglamalarini yozing.

Karbenlarning qanday olinishini ham ko'rsating.

21. Quyidagi reaksiyalar tenglamalarini yozing: a) 1,3-butadiyen + tetraftoretillen; b) allenning 110-115°C da dimerlanishi; d) allenning 400°C da dimerlanishi; e) benzolning 150°C da nikel katalizatorligida gidrogenlanishi.

23. Natriy etilat va boshqa reagentlardan foydalanib, dikarbon kislotalarning murakkab efirlaridan:

- a) siklopentan; b) siklogeksan; d) siklogeptanni sintez qiling.

24. Atsetilen va boshqa reagentlardan foydalanib, a) siklopropan; b) siklopentan; d) siklogeksan; e) siklogeksen; f) 1,3,5,7- siklootatetrayenni sintez siling.

25. Quyidagi sintezlar sxemasini tuzing:

- a) 1-xlor-3-brompropan \rightarrow siklopropankarbon kislota;
- b) siklopropankarbon kislota \rightarrow siklopropen;
- v) siklopentanol \rightarrow trans-1,2- siklopentandiol;
- g) siklogeksanol \rightarrow trans-1,2-siklogeksandiol;
- d) aminotsiklobutan \rightarrow siklobuten.

26. Qanday reaksiyalarga siklobirikish reaksiyalari deyiladi? Bunday reaksiyalar qanday sharoitda boradi? Misollar keltiring.

27. Qanday reaksiyalarga elektrotsiklik reaksiyalar deyiladi? Misollar keltiring.

28. a) (2E, 4Z, 6E)- 2,4,6- oktatriyen; b) (2E, 4Z, 6Z) = 2,4,6- oktatriyenning termik siklizatsiyalanishidan qanday birikmalar hosil bo'ladi?

30. Quyidagi birikmalarga rux ta'sir ettirganda qanday sikloalkanlar hosil bo'ladi?

- a) 1,4-dibrompentanga;
- b) 1,3-dibrombutanga;
- d) 1,3-dibrompentanga;
- e) 1,4-dibrom-2,3-dimetilbutanga;
- f) 1,4-dibrom-2-metilpentanga.

31. a) siklopentan; b) siklogeptan olish uchun qanday kislotalarning kaltsiyli tuzlari piroliz qilinadi?

32. Sintezlar sxemasini tuzing:

- a) atsetilen \rightarrow siklopropan
- b) atsetilen \rightarrow siklogeksan
- d) atsetilen \rightarrow siklopentan
- e) 1-brom-3-xlorpropan \rightarrow siklopropan karbon kislota
- f) siklopropan karbon kislota \rightarrow siklopropen
- g) natriy etilan \rightarrow siklopentan

33. Sintezlar sxemasini tuzing :

- a) 1,3-dibrompropan \rightarrow siklobutankarbon kislota
- b) 1,3-dibrompropan \rightarrow 1,3-siklogeksandikarbon kislota
- d) 1,7-dibromgeptan \rightarrow siklooktan

34. Siklopropan bilan: a) Br_2 , hv; b) 2Cl_2 , hv; d) konsentrlangan HI orasida boradigan reaksiyalarning tenglamalarini yozing.

35. a) siklopropan; b) siklobutan; d) etilsiklobutan; e) metilsiklopropan; f) siklopentan; g) metilsiklopentan; h) izopropilsiklopropan; i) izopropenilsiklopropanning katalitik

gidrogenolizi qanday sharoitda boradi va qaysi mahsulotlar hosil bo'ladi?

36. Metilsiklopropanga a) HBr; b) $\text{CF}_3\text{—COOH}$ ta'sir ettirilganda boradigan reaksiyalar tenglamalarini yozing. 5,6 va h. k. a'zoli sikloalkanlar bu reagentlarni biriktiradimi?

37. a) siklopentan; b) siklogeksan; d) 1,3,5,7- siklooktatetrayen kuchli oksidlovchilar ta'sirida oksidlanganda qanday moddalar hosil bo'ladi?

38. Sikloalkanlarning halqani kengayishi va qisilishi bilan boradigan reaksiyalariga misollar keltiring. Ular qanday sharoitda boradi?

39. Quyidagi aylanishlarni amalga oshiring:

a) siklopropan \rightarrow 1- propanol;

b) siklopentan \rightarrow 2,5- norbornadiyen.

40. 1,3-siklopentadiyen bilan a) CH_3MgBr ; b) Na; d) malein anhidrid; e) $\text{C}_2\text{H}_5\text{ONa}$ ishtirokida atseton; f) Br_2 (1 mol); g) HBr (1 mol) orasida boradigan reaksiyalar sxemalarini yozing. Reaksiyalar mahsulotlarini nomlang.

41. C_7H_{10} tarkibli optik faol malein anhidridni biriktiradi, palladiy ishtirokida qizdirilganda 2 atom vodorodni ajratib, toluolga aylanadi. C_7H_{10} moddaning tuzilishini aniqlang.

42. a) 1-etil-1-siklogeksen; b) 1,3- siklogeksadiyen; d) 1-metil-4-izopropil-1-siklogeksen; e) 1,2- dimetil- 1,3-siklogeksadiyen; f) metilensiklogeksandan
N. D. Zelinskiyning qaytmas kataliz reaksiyasi sharoitida Qanday uglevodorodlar hosil bo'ladi?

43. Atsetilen, siklogeksan va noorganik moddalardan metilsiklogeksilkarbinolni sintez qilish sxemasini tuzing. Bu spirtni oksidlanganda qanday birikma hosil bo'ladi?

44. Siklogeksanon bilan: a) sianid kislota; b) gidroksilamin; d) PCl_5 ; e) etilmagniy bromid orasida boradigan reaksiyalar tenglamalarini yozing.

45. Metilsiklopropan bilan: a) bromid kislota; b) triftoirsirka kislota orasida boradigan reaksiyalar tenglamalarini yozing. Siklogeksan bu kislotalarni biriktiradimi?

Siklik birikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. Sikloalkanlardan qaysi birining halqasi tekis tuzilishga ega?

- A) siklooktanning B) siklogeksanning
C) siklopentanning D) siklopropanning

10, 1, c. 131.; 26, 17-b.

2. Bitta CH_2 - guruhi uchun hisoblaganda qaysi birikmaning yonish issiqligi eng yuqori?

- A) geksanning B) siklopropanning
C) siklopentanning D) siklogeksanning

3, c. 163.; 26, 18-b.

3. Bitta CH_2 - guruhiga to'g'ri keladigan yonish issiqligi qaysi sikloalkan uchun eng kam?

- A) siklododekan B) siklodekan C) siklooktan D) siklogeksan

21, c. 276.; 26, 18-b.

4. Siklopropanda C—C bog'lar orasidagi burchak necha gradusga teng?

- A) 120° B) $109^\circ 28'$ C) 106° D) 90°

26, 17-18-b.

5. Siklogeksanning notekis tuzilganligi (kreslo va vanna shakllarida uchrashi) to'g'risidagi fikrni birinchi bo'lib kim, qachon fanga kiritgan?

- A) 1885-yilda A. Bayer B) 1890-yilda G. Zakse
C) 1920-yilda E Mor D) 1930-yilda O. Xassel

16, c. 200

6.

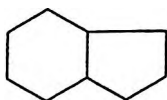


tuzilishli birikma qanday nomlanadi?

- A) spiro[3,5] nonan B) spiro[3,6] nonan
C) bitsiklo[3,5] nonan D) bitsiklo[3,6,0] nonan

3, c. 160-161; 11, c. 204-206.

7.

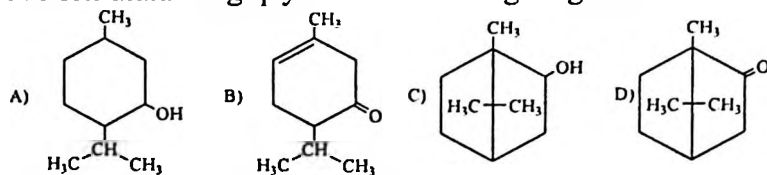


tuzilishli birikmani nomlang.

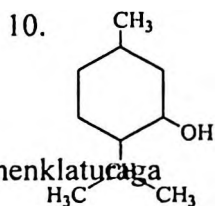
- A) spiro[6,3] nonan B) bitsiklo[4,3,0] nonan
 C) bitsiklo[6,3] nonan D) bitsiklo[3,6,0] nonan
 3, c. 160-161.; 11, c. 204-206.

8. Dekalin sistemik nomenklaturaga binoan qanday nomlanadi?
 A) spiro[4,4,2] dekan B) spiro[4,4,2] dekan
 C) bitsiklo[4,6] dekan D) bitsiklo[4,4,0] dekan
 3, c. 160-161; 11, c. 204-206.

9. Formulalarning qaysi biri kamforaga tegishli?



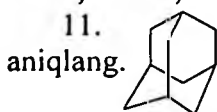
18, 394-395-b.



tuzilishli modda tarixiy (trivial)

binoan qanday nomlanadi?

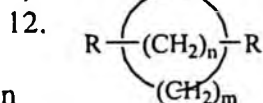
- A) mentan B) kamfora C) L-terpeniol D) mentol
 3, c. 300; 18, 391-b.



tuzilishli moddaning trivial nomini

- A) Limolen B) Adamantan C) α -pinen D) β -pinen

3, c. 161.



tuzilishli birikmalar qanday umumiy nom

bilan

yuritiladi?

- A) rotaksanlar B) katenanlar
 C) kamfenanlar D) terpenoidlar

11, c. 205; 22, c. 334

13. C_6H_{12} tarkibli sikloalkanning stereoizomerlarini hisobga olmaganda nechta strukturaviy izomeri bor?

- A) 10 B) 11 C) 12 D) 13

6, 243- va 248-b.

14. Quyidagi birikmalarning qaysi biri geometrik izomerlar holida uchraydi?

- A) bromsiklopentan B) 1,1-dibromsiklopentan
C) 1,1-dibromsiklogeksan D) 1,2-dixlorsiklopropan

6, 243- va 248-249-b; 26, 7-9-b.

15. Quyidagi birikmalarning qaysi biri ikkita enantiomer holida mavjud bo'ladi?

- A) sis-siklobutandiol-1,2
B) trans-siklobutandiol-1,2
C) sis-siklogeksan -1,2 dikarbon kislota
D) sis-siklobutan -1,2 dikarbon kislota

6, 248-250-b; 15, c. 282-284; 26, 7-9-b.

16. Quyidagilarning qaysi biri mezo- birikma?

- A) bromsiklopentan B) 1,1-dibromsiklopentan
C) trans-siklobutandiol-1,2 D) sis-siklopentandiol-1,2

6, 249-250-b; 15, c. 282-284; 26, 8-9-b.

17. C_7H_{10} tarkibli, olti a'zoli, ikkita qo'sh bog'i bor o'zaro izomer birikmalarning soni nechta?

- A) 10 B) 9 C) 8 D) 7

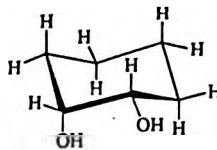
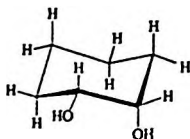
6, 250-b.

18. Quyidagi birikmalardan qaysi biri sis-, trans- izomerlar holida mavjud bo'la olmaydi?

- A) siklotetradekandiol-1,6 B) siklodekandiol-1,6
C) siklogeksandiol-1,3 D) siklopentandiol-1,2

26, 25-b.

19. Quyidagi ikkita sis-siklogeksandiol-1,2 bir-biriga nisbatan qanday izomer?



A)

konfiguratsion (konfiguratsiyaviy) enantiomer

B) konformatsion (konformatsiyaviy) enantiomer

- C) konfiguratsion (konfiguratsiyaviy) diastereomer
 D) konformatsion (konfiguratsiyaviy) diastereomer
 2, t.1, c. 224; 6, 251-b; 15, c. 285-289

20. Trans- siklogeksandiol-1,2 ikkita (bir juft) qanday izomer holida uchraydi?

- A) konfiguratsion (konfiguratsiyaviy) diastereomer
 B) konformatsion (konformatsiyaviy) enantiomer
 C) konformatsion (konfiguratsiyaviy) diastereomer
 D) konfiguratsion (konfiguratsiyaviy) enantiomer
 6, 250-251-b; 15, c. 285-289

21. Digalogenli hosilalarni natriy metalli bilan degalogenlab sikloalkanlar (siklopropan, siklobutan, siklopentan va ularning gomologlari) olish usulini qachon va kim kashf qilgan?

- A) 1881-yilda Markovnikov B) 1882-yilda Freynd
 C) 1887-yilda Gustavson D) 1901-yilda Dikman
 11, c. 212; 26, 10-b.

22. 1,4-dibrombutan va 1,5-dibromsiklopentan dioksan yoki tetragidrofuranda litiy amalgamasi bilan reaksiyaga kirishganda yaxshi unum bilan tegishli ravishda siklobutan va siklopentan hosil bo`ladi. Bu reaksiyalarni qachon va kim(lar) kashf qilganlar?

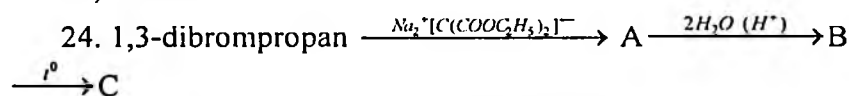
- A) 1967 yilda Konnor va Uilson B) 1885 yilda Bayer
 C) 1968 yilda Levina va Shabarov D) 1947 yilda Prelog va

Shtol

26, 11-b.

23. Siklogeksanonni olish uchun qaysi dikarbon kislolaning kalsiyli tuzini piroliz qilish kerak?

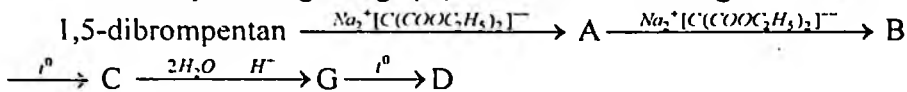
- A) glutar kislolaning B) adipin kislolaning
 C) pimelin kislolaning D) po`kak kislolaning
 18, 376-b.



Reaksiyalarning oxirgi (C) mahsulotni nomlang.

- A) siklopropankarbon kislota
 B) 1,1-siklopropandikarbon kislota
 C) 1,1-siklobutandikarbon kislota
 D) siklobutankarbon kislota
 6, 252-b, 22, c. 318

25. Reaksiyalarning oxirgi (D) mahsulotni nomlang.



- A) siklogeksankarbon kislota
- B) 1,1-siklopentandikarbon kislota
- C) 1,1-siklogeksandikarbon kislota
- D) siklogeksanon

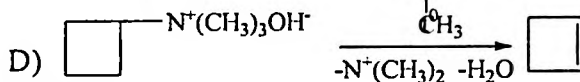
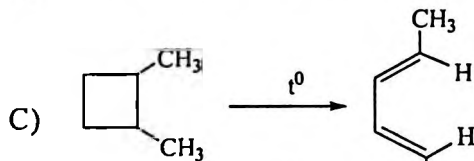
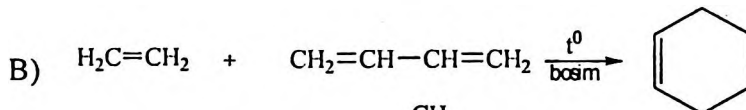
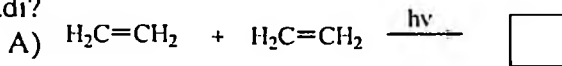
22, c. 318

26. Siklogeksan texnikada qanday usul bilan olinadi?

- A) siklogeksenni katalitik gidrogenlash
- B) siklogeksanonni qaytarish
- C) 1,3-siklogeksadiyenni katalitik gidrogenlash
- D) benzolni katalitik gidrogenlash

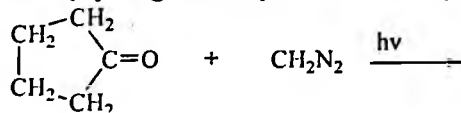
2, τ.1, c. 227; 3, c. 168;

27. Quyidagi reaksiyalardan qaysi biri elektrotsiklik reaksiyalarga kiradi?



6, 255-b.

28. Quyidagi reaksiya mahsuloti qanday alitsiklik birikma?



- A) siklogeksan
- B) siklogeksanon
- C) siklopentanol
- D) 2-metilsiklopentanon-1

19, кн. II, c. 559

29. Diyen sintezi bilan alitsiklik birikmalar olish qanday reaksiyalarga kiritiladi?

- A) elektrolitik B) topologik C) telomerlanish D) siklobirikish
6, 254-255-b.

30. Halqadagi uglerod atomlari soni 30 va undan ko'p bo'lgan yuqori sikllarni olishda qaysi olimning xizmati katta?

- A) A.M. Butlerovning B) A. Bayerning
C) A. Kekulening D) L. Rujichkaning

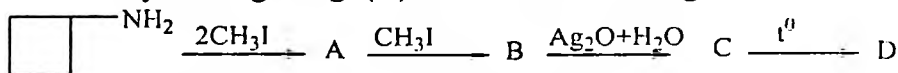
21, c. 283; 22, c. 315

31. Halqadagi uglerod atomlari soni 30 va undan ko'p bo'lgan yuqori sikllarni olish uchun dikarbon kislotalarning qanday tuzlari quruq haydaladi?

- A) natriyli B) kaliyli C) toriyli D) magniyli

21, c. 283

32. Reaksiyalarning oxirgi (D) mahsulotini nomlang.



- A) metilsiklopropan B) metilsiklopropan
C) siklobutadiyen-1,3 D) siklobuten

6, 254-b.

33. Sikloalkanlarning qaysi biri eng qiyin gidrogenlanadi?

- A) metilsiklobutan B) metilsiklopentan
C) metilsiklopropan D) etilsiklopropan

18, 378-b.

34. Sikloalkanlarning qaysi biri eng oson gidrogenlanadi?

- A) metilsiklobutan B) metilsiklopropan
C) etilsiklobutan D) metilsiklopentan

18, 378-b.

35. Katalitik gidrogenolizda birikmalardan qaysi birining siklopropan halqasi qiyin uziladi (ochiladi)?

- A) siklopropan B) metilsiklopropan
C) etilsiklopropan D) siklopropankarbon kislota

19, кн. II, c. 540; 26, 25-b.

36. Quyidagi sikloalkanlarning qaysi biri katalitik gidrogenoliz reaksiyasiga kirishmaydi?

- A) siklogeksan B) metilsiklopentan
C) 1,3-dimetilsiklopentan D) 1,2-dimetilsiklopentan

26. 25-b.

37. Quyidagi sikloalkanlardan qaysi biri brom bilan birikish reaksiyasiga kirishmasdan, faqat o`rin olish reaksiyasiga kirishadi?

- A) siklopropan B) siklopentan
C) metilsiklopropan D) sis-1,2-dimetilsiklopropan

18, 378-379-b.; 26, 26-b.

38. Quyidagi sikloalkanlardan qaysi biri vodorod bromidni biriktirmaydi?

- A) metilsiklopropan B) etilsiklopropan
C) metilsiklobutan D) metilsiklopentan

26. 27-b.

39. Siklopentanni kuchli oksidlovchilar ta'sirida oksidlanganda qanday birikma hosil bo'ladi?

- A) metilmalon kislota B) adipin kislota
C) glutar kislota D) qahrabo kislota

18, 379-380-b.; 26, 27-28-b.

40. Siklogeksen, siklogeksadiyen va ularning gomologlari platina yoki palladiy ishtirokida vodorod atomlarini qayta taqsimlash (termik katalitik disproporsionirlash) reaksiyasiga kirishadi. Bu qaytmas kataliz reaksiyasi qaysi olimning nomi bilan yuritiladi?

- A) V.V. Markovnikov B) Y.N. Demyanov
C) N.M. Kinjer D) N.D. Zelinskiy

6. c. 257-258; 26, 29-30-b.

41. Qaytmas kataliz reaksiyasi sharoitida 1-metil-4-izopropil-1-siklogeksendan qanday uglevodorod(lar) hosil bo'ladi?

- A) faqat 1-metil-4-izopropilsiklogeksan
B) faqat 1-metil-4-izopropilbenzol
C) faqat 1-metil-4-izopropil-1,3-geksadiyen
D) 1-metil-4-izopropilsiklogeksan va 1-metil-4-izopropilbenzol

3, c. 171; 21, c. 288

42. 1,3-siklopentadiyen ishqoriy muhitda (ishqorning spirdagi eritmasi. natriy etilat ishtirokida) alifatik aldegid va ketonlar bilan kondensatlanib, rangli birikmalar hosil qiladi. Bu birikmalar qanday umumiy nom bilan yuritiladi?

A) metallotsenlar B) fulvenlar C) prostaglandinlar D) pramanlar

21, c. 291

43. Siklopropan reagentlarning qaysi biri bilan reaksiyaga kirishmaydi?

- A) bromning to'rtxlorli ugleroddagi eritmasi
- B) nur ishtirokida xlor
- C) 100°C da nikel ishtirokida vodorod
- D) kaliy permanganatning neytral sovuq eritmasi

15, c. 269 i 295-296

44. Siklopropan halqasini saqlagan birikmalarning IQ-spektrida halqaning deformatsion tebranishlari qaysi sohalarda kuzatiladi?

- A) 800-810 sm^{-1}
- B) 1000-1050 sm^{-1}
- C) 1250-1300 sm^{-1}
- D) 1350-1400 sm^{-1}

11, c. 215

45. Siklopropanning IQ-spektrida C-H bog'larining valent tebranishlari qaysi sohada kuzatiladi?

- A) 2500-2650 sm^{-1}
- B) 2750-2800 sm^{-1}
- C) 3010-3100 sm^{-1}
- D) 3200-3300 sm^{-1}

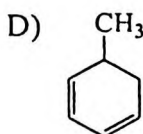
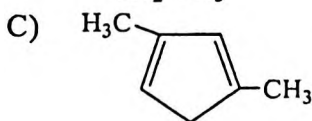
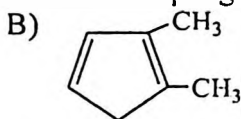
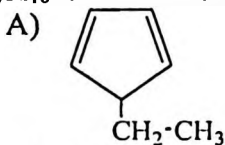
11, c. 215

46. C_6H_{12} tarkibli birikmaning PMR - spektrida bitta signal (δ 1,42 m.h.) bor. Birikmaning tuzilishini aniqlang.

- A) siklogeksan
- B) metilsiklopentan
- C) etilsiklobutan
- D) n-propilsiklopropan

17, c. 76

47. C_7H_{10} tarkibli optik faol modda malein anhidridni biriktiradi. palladiy ishtirokida qizdirilganda 2 atom vodorodni ajratib, toluolga aylanadi. C_7H_{10} tarkibli moddaning tuzilishini aniqlang.



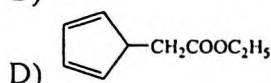
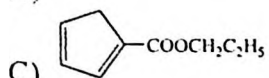
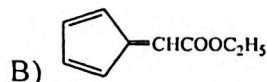
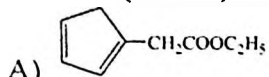
6, 247- va 257-b.

48. Birikmalardan qaysi biri gidroksilamin bilan reaksiyaga kirishganda oksim hosil bo'ladi?

- A) xlorciklogeksan
- B) metilsiklogeksan
- C) siklogeksanon
- D) siklogeksanol

19. кн. II, с. 555

49. Quyidagi birikmalardan qaysi birining UB-spektrida λ_{maks} 248 nm (ϵ 3420) kuzatiladi?



17. с. 29

50. Sikloalkanlar IQ-spektrlarida CH_2 -guruhlarning tebranish chastotalari qaysi intervalda kuzatiladi?

A) $1510-1550 \text{ cm}^{-1}$

B) $1440-1470 \text{ cm}^{-1}$

C) $1560-1590 \text{ cm}^{-1}$

D) $1610-1640 \text{ cm}^{-1}$

8. с. 358

51. C_6H_{12} tarkibli birikma PMR-spektrida δ 1,42 m.h. da bitta signal bor. Uning tuzilishini aniqlang.

A) siklogeksan B) geksen-1 C) geksen-2 D) 2-metilpenten-2

17, с. 76

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	B	18	D	35	B
2	D	19	D	36	D
3	D	20	C	37	D
4	D	21	B	38	D
5	C	22	B	39	B
6	D	23	C	40	A
7	A	24	A	41	C
8	D	25	C	42	D
9	D	26	D	43	D
10	A	27	C	44	D
11	A	28	C	45	A
12	C	29	C	46	A
13	B	30	C	47	D
14	C	31	B	48	C
15	C	32	A	49	B
16	D	33	D	50	A
17	D	34	B	51	D

XVII BOB. AROMATIK BIRIKMALAR

Aromatik birikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalarga oid masala va mashqlar

1. Benzolning aromatik xossalari yoki aromatik tabiati deganda nimani tushunasiz?

2. Benzoldagi uglerod-uglerod va uglerod-vodorod bog'lari qaysi orbitallarning qoplanishidan hosil bo'lgan?

3. Benzolning electron tuzilishini valent bog'lar (rezonans sturukturalar) va molekulyar orbitallar usuli yordamida tushuntiring.

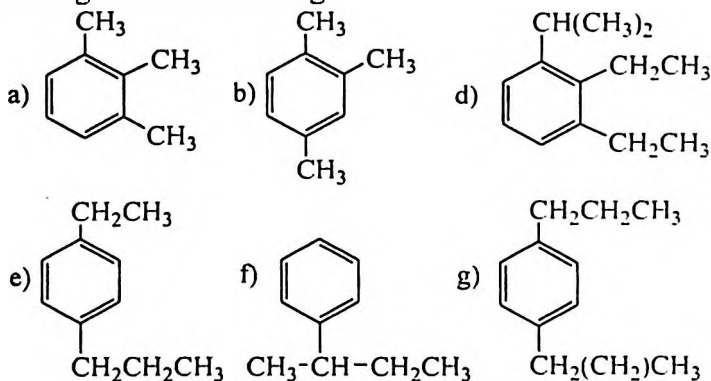
4. E. Xyukkelning aromatiklik qoidasiga asoslanib, quyidagi uglevodorod va ion ekanliklarini ko'rsating: ----

(Shoyimardonov masala va mashqlar 262 b 4 mashq)

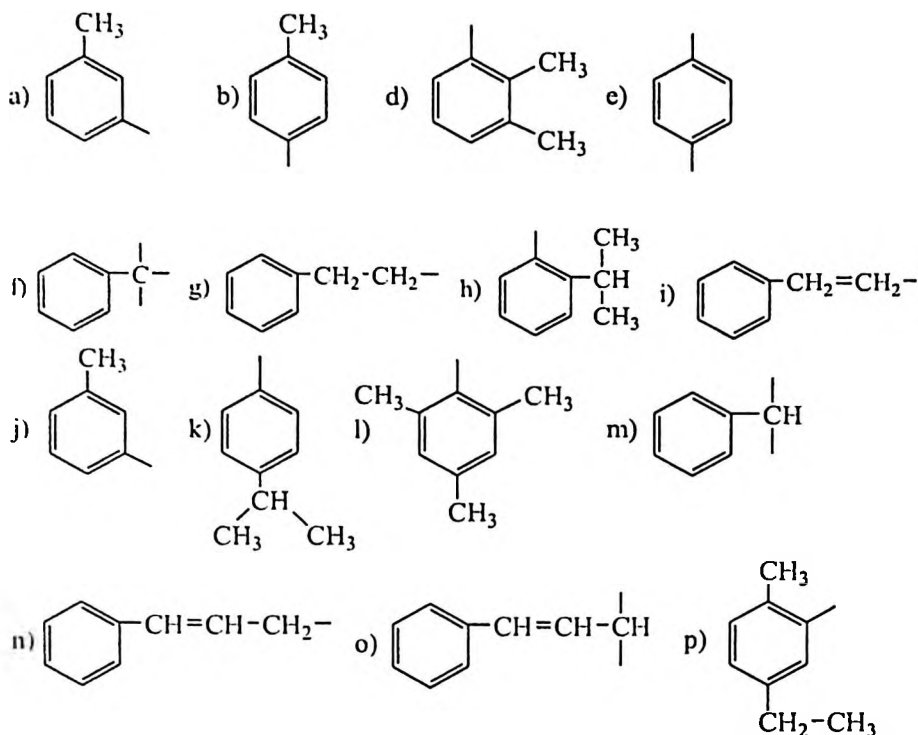
5. Quyidagi aromatik uglevodorodlarning tuzilish formulasini yozing:

a) 1,4 dietilbenzol b) 1-metil 3-butilbenzol d) 1,2-dimetil 4-pentilbenzol e) 1-etil, 4- izopropilbenzol f) 1-metil, 2-etil, 4-izopropilbenzol g) 1,2,4,5-tetrametilbenzol (durol) h) geksametilbenzol i) alilbenzol (3-fenilpropen) j) etinilbenzol (fenil atsetilen) k) uchlamchipentilbenzol l) o-etiltoluol

6. Quyidagi aromatik uglevodorodlarni sistemetik nomenklaturaga binoan nomlang.



7. Quyidagi aromatik radikalni nomlang.



8. C_9H_{12} takibli izomer benzol qatori uglevodorodlarning tuzilish formulasini yozing va ularni nomlang.

9. Uchta har xil radikal saqlagan uch almashingan benzol (masalan: metiletilpropilbenzol) ning barcha izomerlari tuzilish formulalarini yozing va ularni nomlang.

10. To'yingan siklik uglevodoroddan benzol olish tenglamasini yozing.

11. Nega benzol bromli suv va kaliy permanganat eritmasini rangsizlantirmaydi?

12. C_8H_{10} formulasiga mos keladigan barcha aromatik uglevodorodlarning formulasini yozing.

13. Metilsiklogeksanning degidrogenlanish reaksiyasi tenglamasini yozing.

14. Benzolda o'rinbosarlarining o'rnini bilan farq qiladigan izomerlarini ko'rsating.

15. Quyidagi o'zgarishlarni amalga oshiradigan reaksiya tenglamalarini yozing:

geksan → benzol → siklogeksan.

16. C_9H_{12} tarkibli aromatik uglevodorodlarning barcha izomer formulalarini yozing.

17. C_9H_{12} tarkibli aromatik uglevodorod kaliy per-manganat bilan oksidlanganda benzoltrikarbon kislota hosil qilib, $FeBr_3$ ishtirokida bromlanganda faqat birta monobromli hosila hosil qilsa. uning tuzilishini aniqlang.

18. C_8H_{10} tarkibli aromatik uglevodorod qizdirib turib kislotali muhitda kaliy permanganat eritmasi bilan oksidlanganda $C_7H_6O_2$ tarkibli birikma hosil qiladi. Boshlang'ich uglevodorodning tuzilishini va reaksiya mahsulotini aniqlang.

19. To'yinmagan uglevodorodga xlorning uglerod(IV)-xloriddagi mo'l eritmasi ta'sir ettirilganda 3,78 g dixlorid olindi. Shunday miqdordagi uglevodorod mo'l miqdor-dagi bromli suv bilan 5.56 g dibromid hosil qiladi. Uglevodorodning molekulyar formulasini yozib, masala shartini qanoatlantiradigan to'rtta izomerini tuzilish formulalarini ko'rsating.

20. To'yinmagan uglevodorodning ma'lum miqdoriga qorong'ida xlorning uglerod(IV)-xloriddagi mo'l eritmasi ta'sir ettirilganda 3.5 g dixlorid hosil bo'lib, bromning dixloretandagi eritmasi ta'sir ettirilsa 5,28 g dibromid hosil bo'ladi. Uglevodorodning tuzilishini aniqlang.

21. Benzol bilan stirolning aralashmasi bor. Bu aralashmadan benzolni qanday ajratib olsa bo'ladi?

22. Quyidagi alkanlarning degidrosikllanishidan (aromatlanishidan) hosil bo'ladigan moddalarni nomlang.

a) 2,5-dimetil geksan b) n-geptan d)n-oktan e)2,2,4- trimetil pentan. Bu reaksiyalarni boorish sharoitlarini ko'rsating.

23. Quyidagi sikloalkanlarning katalitik degidrogenlanishidan qanday aromatik uglevodorodlar hosil bo'ladi?

a) siklogeksan b) metilsiklogeksan d) izopropilsiklogeksan. Bu reaksiyalarning borish sharoitini ko'rsating.

24. Alkinlarning siklotremerlanishi reaksiyalari qanday sharoitda boradi? a)metilatsetilen b)dimetilatsetilen siklotremerlanganda qanday aromatik uglevodorodlar hosil bo'ladi?

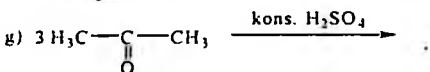
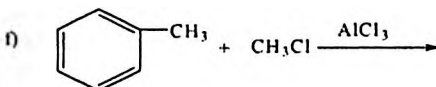
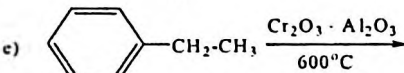
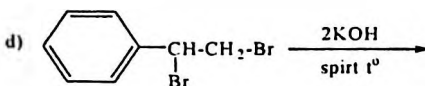
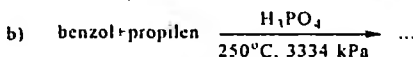
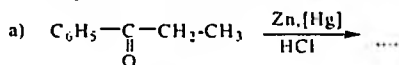
25. Vyurs-Fitting reaksiyasidan foydalanib, quyidagi aromatic uglevodorodlarni xosil qiling: a) etilbenzol b)izobutilbenzol v)0-ksilol g) m-ksilol d) 1,4-dipropilbenzol e) uchlamchibutilbenzol j) 1-metil 4-ikkilamchi butilbenzol z)1-izopropil 4-uchlamchi

butilbenzol. Bu reaksiyalarning tenglamalarini yozing. Bu reaksiyalarda qanday qo'shimcha mahsulot hosil bo'lishini ko'rsating.

26. Benzolga aluminiy xlorid ishtirikida a) etil xlorid b) propil xlorid v) izobutil xlorid g) 100°Cda etilen d) propilen ta'sir ettirilganda qanday ulevodorod hosil bo'ladi.

27. a) benzol b) toluol v) etilbenzol g) stirol sanoada qanday olinadi.

28. Quyidagi reaksiyalar mahsulotlarini nomlang .



29. Toluol olish mumkin bo'lgan uchtadan kam bo'lmagan reaksiya tenglamalarini keltiring. Reaksiyalarning borish sharoitlarini ko'rsating.

30. Quyidagi alkanlarning degidrosikillanishidan (aromatlanishidan) xosil bo'ladigan moddalarni nomlang.

31. Aromatik uglevodorodlarga xos bo'lgan sifat reaksiyalarni keltiring.

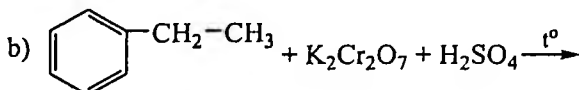
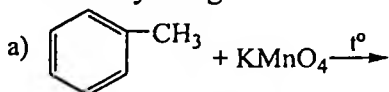
32. Benzolga ultrabinafsha nur ta'sir ettirilganda uning qanday izomerlari hosil bo'ladi?

33. Benzolning Byorch bo'yicha qaytarilish (natriy va suyuq ammiak bilan etil spirt ishtirokida reaksiyasi tenglamasini yozing.

34. Elektrondonor va elektronakseptor o'rinbosarlariga misollar keltiring. Elektrofily o'rin olish reaksiyalarida bu o'rinbosarlarning yo'naltirish ta'sirini induktiv va mezomer effektlar (sitatik faktorlar) orqali tushuntiring.

35. Elektron donor va elektronaksetor o'rinbosarlar π -komplekslarning hosil bo'lishiga va τ -komplekslarning barqarorligiga qanday ta'sir ko'rsatadi? Misollar keltiring.

37. Quyidagi oksidlanish-qaytarilish reaksiyalarining turli tenglamalarini yozing:




38. Toluolning mukammal tuzilishlari va mezo formasini yozing.

39. Etilbenzolni: a) xona temperaturasida katalizator (qaysi?) ishtirokida xlorlaganda qanday moddalar hosil bo'ladi? b) katalizatorsiz qizdirish va yoritish bilan xlorlaganda – chi?


40. a) 0,2 mol benzolni yoqish uchun qancha kislorod sarflanadi? 0,2 mol toluolni yoqish uchun – chi?

41. 15,6 g benzol $AlBr_3$ ishtirokida 64 g brom bilan reaksiyaga kiritildi. Agar birom to'liq sarflangan bo'lsa, qanday birikmalar hosil bo'ladi?

42. Fridel-Krafts reaksiyasi sharoitida toluol bilan metil xloriddan qanday birikmalar hosil bo'lishi mumkin: a) reagentlar ekvimol nisbatan olinganda; b) ortiqcha CH_3Cl uzoq ta'sir ettirilganda.

43. C_8H_6 tarkibli uglevodorod bromli suvni rangsizlantiradi kumush oksidning ammiakdagi eritmasi bilan cho'kma beradi, oksidlanganda esa benzoil kislotani  ni hosil qiladi. Uglevodorodning tuzilishini aniqlang.

44. Quyidagi uglevodorodlar molekulalarida yon zanjirlar sonini va holatini qanday aniqlash mumkin? a) butilbenzol; b) m-ksilol; d) 1,3 dimetil-5-propil benzol; e) o-dietil benzol; f) p-dipropil benzol.

45. C_9H_{12} tarkibli uglevodorodni oksidlab,  tuzilishli kislotani olinadi. Uglevodorodning tuzilishini aniqlang.

46. Toluol bilan kaliy permanganatning: a) suvli muhitda qizdirganda b) kislotali muhitda ta'sirlashuv reaksiyalarining tenglamalarini yozing.

47. Antranil kislota (2-aminobenzoy kislota) ga bromli suv ta'sir ettirilganda mono va dibromli hosilalar aralashmasi olindi. Olingan izomerlarning formulalarini yozing.

48. Konsentrlangan nitrat va sulfat kislotalar aralashmasi salitsil aldegid (2-gidroksibenzoy aldegid) ga ta'sir ettirilganda mono va dinitrohosilalar aralashmasi olindi. Olingan izomerlarning formulalarini yozing.

49. Etilbenzoldan ikki bosqichda 3-nitrobenzoy kislota olish sxemasini ko'rsating. Reaksiyalarning borish sharoitlarini tushuntiring.

50. Izopropilbenzoldan ikki bosqichda 4-nitrobenzoy kislota olish sxemasini ko'rsating. Reaksiyalarning borish sharoitlarini tushuntiring.

51. Uchta mahkamlangan ampulalarda uch suyuqlik: benzol, geptan va stirol bor. Ularning kimyoviy va fizikaviy xossalarigi asoslanib qaysi ampulada qaysi modda borligini qanday aniqlash mumkin? Reaksiyalarning tenglamalarini yozing.

52. Geptandan platina katalizator ishtirokida olinadigan A uglevodorod nitrat kislota bilan ta'sirlashib $C_7H_5N_3O_6$ tarkibli birikma hosil qiladi. A modda kislota qo'shilgan kaliy permanganat eritmasi qo'shib qaynatilsa, $C_7H_6O_2$ tarkibli birikma hosil bo'ladi. A moddaning tuzilishini aniqlab yuqorida aytilgan reaksiyalarning tenglamalarini yozing.

53. C_7H_7Cl tarkibli modda oksidlanganda a) benzoy kislota b) o-xlorbenzoy kislota hosil bo'lsa uning tuzilishi qanday bo'lishi mumkin?

54. A modda bug'lari qizdirilgan platina katalizator ustidan o'tkazilganda o'ziga xos hidli, bug'ining hajmi A modda bug'ining hajmidan to'rt baravar ko'p bo'lgan suyuq B modda hosil bo'ladi. B moddaga konsentrlangan nitrat va sulfat kislotalar aralashmasi ta'sir ettirilsa, achchiq bodom hidi keladigan og'ir suyuqlik C hosil bo'ladi. C moddaning zichligi propenning zichligidan qariyb uch baravar katta. A, B va C moddalarni aniqlang. Reaksiyalarning tenglamalarini yozing.

55. Ajralgan vodorod 84 g geksen-1 ni gidrogenlash uchun yetarli bo'lishi uchun degidrogenlash va sikllash yo'li bilan toluol olish uchun talab qilinadigan n-geptanning massasini toping. Bunda necha gramm toluol hosil bo'ladi?

56. Benzol va siklogeksenning aralashmasi 75 g 3,2%li bromli suvni rangsizlantira oladi. Shunday miqdordagi namuna mo'l

miqdordagi kislorodda yoqilib, reaksiya mahsuloti mo'l ohakli suvdan o'tkazilganda 21 g cho'kma hosil bo'ladi. Boshlang'ich aralashmadagi moddalarning massa ulushlarini toping.

57. Tarkibiga benzol xalqasi, birta nitrogurui va ikkita metil radikali saqlagan barcha moddalarning tuzilish formulalarini yozing.

58. Quyidagi uglevodorodlarning katalitik degidrosikllanishida (aromatlanishida) hosil bo'ladigan moddalarni toping: a) geptan; b) 2-metilgeksan; v) oktan; g) 4-metilgeptan; d) 2,5-dimetilgeksan; e) 2-metil-5-etilgeptan.

59. Benzolni a) propilen bilan b) izobuten bilan alkilashda qaysi moddalar hosil bo'ladi? Nima uchun bu reaksiyalarda kislotalar katalizator rolini o'ynaydi?

60. a) C_8H_6 va b) C_9H_8 tarkibli uglevodorodlar bromli suvni rangsizlantirib, oksidlanganda benzoy kisloata hosil qiladi va kumush nitratning ammiakdagi eritmasi bilan cho'kma beradi. Bu uglevodorodlarning formulasini yozing.

61. Siklogeksen bilan siklogeksanning aralashmasi 320 g 10% li bromning CCl_4 dagi eritmasini rangsizlantiradi. Aralashma to'liq degidrogenlanib benzolga aylanganda ajraladigan vodorod 11,2 l (n.sh.) butadienni gidrogenlash uchun yetarli bo'lsa, aralashmadagi uglevodorodlarning massa ulushlarini toping.

62. Benzol bug'i va vodoroddan iborat aralashmaning siklogeksan sintez qilish kontakt apparatidan o'tkazilishidan oldingi zichligi ozonga nisbatan 0,2 bo'lib, reaksiyadan keyin esa 0,25 ga tenglashdi. Siklogeksanning reaksiya aralashmadagi hajmiy ulushini va benzolga aylanish unumini toping.

63. Benzol, siklogeksen va siklogeksan aralashmasi katalitik degidrogenlanganda 23,4 g benzol olinib, 11,2 l (n.sh.) vodorod ajraldi. Boshlang'ich aralashma 16 g bromni biriktira olishi ma'lum bo'lsa, aralashmadagi moddalarning massa ulushlarini toping.

64. Benzol, siklogeksen va siklogeksan aralashmasi bromli suv bilan ishlov berilganda 16 g bromni biriktiradi; boshlang'ich aralashma katalitik degidrogenlanganda 39 g benzol va boshlang'ich aralashmani to'liq gidrogenlash uchun talab qilinadiganidan ikki baravar kam vodorod hosil bo'ladi. Boshlang'ich aralashmaning tarkibini (hajm bo'yicha foizlarda) toping.

65. Benzol va toluol aralashmasi kaliy permanganat eritmasi bilan kislotali muhitda qizdirib oksidlanganda 8,54 g bir asosli organik

kislota olindi. Bu kislota natriy gidrokarbonatning ortiqcha olingan miqdori bilan ta'sirlashganda boshlang'ich aralashma to'liq yondirilganda hosil bo'ladigan gazlar hajmidan 19 marta kam gaz ajraldi. Aralashmadagi uglevodorodlarning massa ulushlarini toping.

Aromatik birikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. "Aromatiklik" tushunchasi (qoidasi)ni fanga qaysi olim kiritdi?

- A) K. Ingold B) A. Kekule C) R. Xofman D) E.

Xyukkel

1, 4.2, c. 332; 2, 1.1, c. 387; 26, 46-b.

2. A. Kekule benzol uchun quyidagi tuzilish formulalaridan qaysi birini taklif qildi?



1, 4.2, c. 328; 26, 38-b.

3. Benzol uchun quyidagi tuzilish formulalaridan qaysi birini Ladenburg taklif qildi?




1, 4.2, c. 329; 26, 39-b.

4. Benzol  uchun tuzilishli formulani qaysi olim taklif qildi?

- A) Klaus B) Ladenburg C) Kekule D) Dyuar

26, 38-b.

5. Benzol  uchun tuzilishli formulani kim taklif qildi?

- A) Klaus B) Ladenburg C) Kekule D) Dyuar

1, 4.2, c. 329; 26, 38-b.

6. Benzolning rezonans energiyasi necha kJ/mol ga teng?

- A) 182 B) 170 C) 166 D) 150,8

26, 41-b.

7. Benzoldagi uglerod atomlarining erkin valentlik indeksi nechaga teng?

- A) 0,399 B) 0,451 C) 0,459 D) 0,520

26, 45-b.

8. Benzoldagi har qaysi C—C tartibi nechaga teng?

- A) 1,667 B) 1,586 C) 1,535 D) 1,606

26, 45-b.

9. Benzoldagi π -bog' tartibi nechaga teng?

- A) 0,886 B) 0,840 C) 0,667 D) 0,590

26, 45-b.

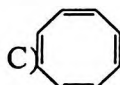
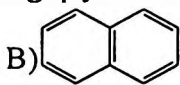
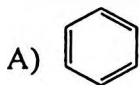
10. E. Xyukkel qoidasiga asosan aromatik xossalarga ega bo'lishi uchun halqali birikma halqasida nechta π -elektron saqlanishi kerak?

A) 1,5,9,13,17,21,25 va hokazo B) 2,6,10,14,18,22,26 va hokazo

C) 3,7,11,15,19,23,27 va hokazo D) 3,9,15,21,27,33,39 va hokazo

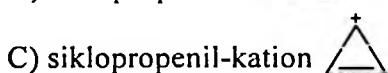
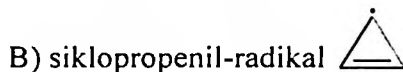
2, r.1. c. 387; 26, 46-b.

11. Birikmalarning qaysi biri aromatik xossalarga ega emas?



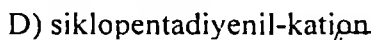
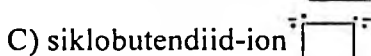
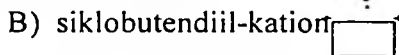
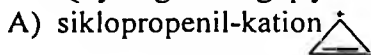
26, 47-b.

12. Quyidagilarning qaysi biri nobenzoid aromatik sistema?



3, c. 214; 26, 48-b.

13. Quyidagilarning qaysi biri antiaromatik sistema?



3, c. 213-215

14. Quyidagilarning qaysi biri nobenzoid aromatik sistema?



B) benzolning kation-radikali

C) benzolning anion-radikali



D) siklopentadiyenid-ion



3, c. 213-215

15. Sistemalarning qaysi biri nobenzoid aromatik sistema?

A) tropiliy kationi



B) siklobutadiyen



C) benzolning anion-radikali



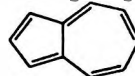
D) siklogeptatriyenil-radikal



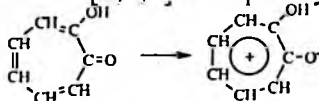
3, c. 213-216; 26, 49-b.

16. Birikmalarning qaysi biri aromatik xossalarga ega emas?

A) Azulen (bitsiklo-[5,3,0]-dekapentayen



B) tropolon



C) ferrotsen yoki disiklopentadiyenilferrum



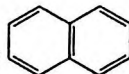
D) siklogeptatriyen



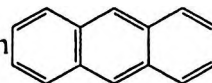
21, c. 442-450; 22, c. 463-471; 26, 47-b.

17. Birikmalarning qaysi biri aromatik xossalarni namoyon qilmaydi?

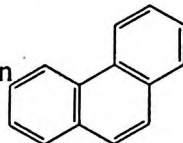
A) naftalin



B) antratsen



C) fenantren

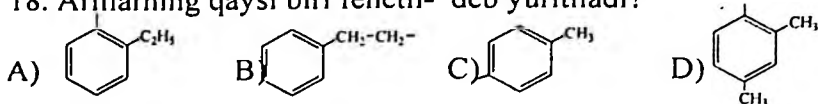


D) siklooktatetrayen-1,3,5,7



26, 47-b.

18. Arillarning qaysi biri fenetil- deb yuritiladi?



3, c. 178

19. C_8H_{10} tarkibli benzol qatori uglevodorodlarining soni nechta?

A) oltita B) beshta C) to'rtta D) uchta

21, c. 302

20. C_9H_{12} tarkibli izomer benzol qatori arenlarining soni nechta?

A) 6 ta B) 7 ta C) 8 ta D) 9 ta

6, 263- va 267-b.

21. Uchta har xil alkil radikal saqlagan uch almashingan benzol (masalan, metiletilpropilbenzol)ning nechta izomeri bor?

A) 12 ta B) 10 ta C) 9 ta D) 8 ta

6, 267-b.

22. Dimetilbenzol(ksilol)larning nechta izomeri bor?

A) 3 ta B) 4 ta C) 5 ta D) 6 ta

6, 258-b; 26, 51-b.

23. Trimetilbenzollar soni nechta?

A) 7 ta B) 6 ta C) 5 ta D) 3 ta

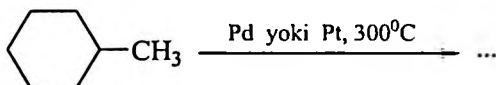
26, 53-b.

24. Toluol olish uchun qaysi alkanni degidrotsikllanish reaksiyasiga kiritish kerak?

A) *n*-geksanni B) *n*-geptanni
C) *n*-oktanni D) 3,4-dimetilpentanni

3, c. 179; 26, 55-b.

25.



Reaksiya natijasida qanday aren hosil bo'ladi?

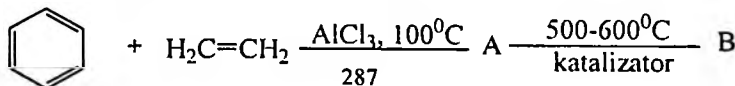
A) benzol B) toluol C) *o*-ksilol D) *m*-ksilol

3, c. 179; 26, 54-b.

26. 1,3,5-trimetilbenzolni olish uchun qaysi uglevodorodni siklotrimerlash kerak?

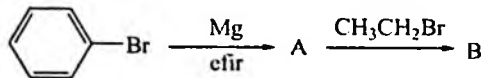
A) propilen B) etilen C) atsetilen D) propin

3, c. 154; 18, 414-b; 26, 260-b.



27. Reaksiyalarning oxirgi (B) mahsuloti nomini aniqlang.
 A) etinilbenzol B) stirol C) 1,4-divinilbenzol D) *o*-ksilol
 26, 57-b.

28.



Reaksiyalar oxirgi (B) mahsuloti qanday aren?

- A) stirol B) allilbenzol
 C) etinilbenzol D) etilbenzol

26, 55-b.

29. Metilsiklogeksan $\xrightarrow{\text{Pd, I, P}}$...

Reaksiya mahsuloti qanday uglevodorod?

- A) toluol B) benzol C) stirol D) metilensiklogeksan
 21, 304-b.

30. Aromatik uglevodorodlar qaysi moddalar ta'sirida sifat reaksiyasini beradi?

- A) kons. sulfat kislota va dietilefir
 B) etanol va kaliy permanganat kristallari
 C) dioksan va kaliy xlorid kristallari
 D) xloroform yoki uglerod(IV) xlorid va suvsiz alyuminiy xlorid
 6, 268-b.

31. Benzolga ultrabinafsha nur ta'sir ettirilganda uning qanday izomer(lar) hosil bo'ladi?

- A) faqat benzvalen



- B) faqat prizman (Ladenburg benzoli)



- C) faqat Dyuar benzoli



- D) benzvalen, prizman, Dyuar benzoli va fulven

3, c. 193; 6, 268-269-b.

32. Benzvalen, prizman va Dyuar benzoli benzolning qanday izomerlari

- A) strukturaviy izomerlari B) metamerlari
 C) optik izomerlari D) valent izomerlari

3, c. 193; 6, 268-269-b.

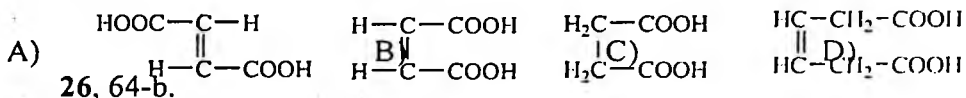
33.

Fulven  benzolning qanday izomeri?

- A) strukturaviy izomeri B) metameri
C) optik izomeri D) tautomeri

6, 269-b.

34. Benzolni V_2O_5 katalizatorligida $400-500^{\circ}C$ da havo kislorodi bilan oksidlaganda hosil bo'ladigan organik birikmaning tuzilishini aniqlang.



26, 64-b.

35. Yadosini monoxlorlaganda faqat bitta izomer hosil qiladigan C_9H_{12} tarkibli arenni nomlang.

- A) 1-metil-3-etilbenzol B) 1-metil-4-etilbenzol
C) 1,2,3-trimetilbenzol D) 1,3,5-trimetilbenzol

36. 0,2 mol benzolni yoqish uchun necha mol kislorod sarflanadi?

- A) 0,3 mol B) 0,4 mol C) 0,1 mol D) 1,5 mol

6, 266- va 270-b.

36. Benzol halqasidagi o`rinbosarlarning qaysi biri yangi (ikkinchi) elektrofil o`rinbosar (reagent)ni *m*-holatga yo`naltiradi?

- A) $-\text{OH}$ B) $-\text{CH}_3$ C) $-\text{NO}_2$ D) $-\text{OCH}_3$

26, 69-b.

37. Benzol halqasidagi o`rinbosarlardan qaysi biri ikkinchi elektrofil o`rinbosar (reagent) ni *o*- va *p*-holatlarga yo`naltiradi?

- A) $-\text{NO}_2$ B) $-\text{COOH}$ C) $-\text{SO}_3\text{H}$ D) $-\text{NH}_2$

26, 68-b.

38. Benzol halqasidagi o`rinbosarlardan qaysi biri ikkinchi nukleofil reagentni *o*- va *p*-holatlarga yo`naltiradi?

- A) $-\text{COOH}$ B) $-\text{CH}_3$ C) $-\text{SH}$ D) $-\text{N}(\text{CH}_3)_2$

21, c. 316-318

39. O`rinbosarlardan qaysi biri yangi (ikkinchi) nukleofil o`rinbosarni *m*-holatga yo`naltiradi?

- A) $-\text{CCl}_3$ B) $-\text{CN}$ C) $-\text{CHO}$ D) $-\text{N}(\text{CH}_3)_2$

21, c. 316-318

40. O`rinbosarlardan qaysi biri ikkinchi elektrofil o`rinbosarning yadroga kirishini juda osonlashtiradi?

A) $-CCl_3$ B) $-NH_2$ C) $-Cl$ D) $-NO_2$

26, 68-69-b.

41. Qaysi birikma elektrofil almashinish reaksiyalariga oson kirishadi?

A) nitrobenzol B) xlorbenzol C) fenol D) brombenzol

18, 409-410-b.

42. Benzol va uning gomologlari IQ-spektrlarida C–H bog`larining valent tebranishlari qaysi sohada kuzatiladi?

A) $2400-2450\text{ sm}^{-1}$ B) $2700-2750\text{ sm}^{-1}$

C) $3000-3050\text{ sm}^{-1}$ D) $3300-3350\text{ sm}^{-1}$

3. c. 184; 15, c. 401; 17, c. 40 i 54-55

43. Benzol qatori arenlarining IQ-spektrlarida $C \equiv C$ bog`larining valent tebranishlari qaysi sohalarda kuzatiladi?

A) $1500-1600\text{ sm}^{-1}$ B) $1700-1800\text{ sm}^{-1}$

C) $1850-1880\text{ sm}^{-1}$ D) $1900-1950\text{ sm}^{-1}$

3. c. 184; 15, c. 401; 17, c. 40 i 54-55

44. Benzol qatori arenlarning IQ-spektrlarida C–H bog`larning deformatsion tebranishlari qaysi sohada kuzatiladi?

A) $500-600\text{ sm}^{-1}$ B) $650-900\text{ sm}^{-1}$

C) $1000-1100\text{ sm}^{-1}$ D) $1370-1380\text{ sm}^{-1}$

3. c. 184; 17, c. 40 i 54-55

45. Benzol va alkilbenzollarning elektron spektrlarida xarakterli yutilish qaysi sohada kuzatiladi?

A) 580 nm va 590 nm B) 510 nm va 540 nm

C) 480 nm va 490 nm D) 200 nm va 260 nm

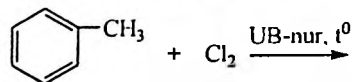
10, 2. c. 174-177; 17, c. 20

46. YaMR-spektrlarda aromatik protonlarning kimyoviy siljishi shkalasida necha m.h. ga teng?

A) 0,5 m.h. B) 1,3-1,5 m.h. C) 2-2,5 m.h. D) 6-8,5 m.h.

10, 2, c. 178; 23, 86-88-b.

47.



Reaksiya qanday mexanizmda boradi?

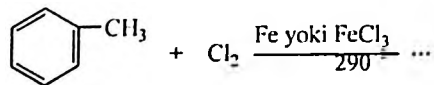
A) A_N

B) S_E

C) S_R

D) S_N

48.



Reaksiya qanday mexanizmida boradi?

- A) S_NAr B) S_EAr C) S_RAr D) A_N

26, 127-128-b.

49. Toluol nitrolovchi aralashma (nitrat va sulfat kislotalar aralashmasi) bilan $30^{\circ}C$ gacha qizdirilganda qanday birikmalar hosil bo'ladi?

- A) faqat *o*-nitrotoluol
B) faqat *m*-nitrotoluol
C) faqat *p*-nitrotoluol
D) asosan *o*- va *p*-nitrotoluollar va oz miqdorda *m*-nitrotoluol

15, c. 371

50. C_8H_{10} tarkibli arenni kaliy permanganatning suvdagi eritmasi bilan $100^{\circ}C$ da oksidlaganda ftal kislota hosil bo'ldi. Oksidlangan arenni aniqlang.

- A) etilbenzol B) *o*-ksilol
C) *m*-ksilol D) *p*-ksilol

15, c. 370-371

51. C_8H_{10} tarkibli uglevodorodning PMR-spektrida δ 2.1 va 7.2 m.h. sohada intensivligi 3:2 nisbatidagi ikkita singlet signal bor. Birikmaning tuzilishini aniqlang.

- A) *o*-ksilol B) *m*-ksilol
C) *p*-ksilol D) etilbenzol

17, c. 85

52. IQ-spektrlarda benzol C–H bog'larining valent tebranishlari qaysi sohada namoyon bo'ladi?

- A) 2800 sm^{-1} B) 3000 sm^{-1} C) 3200 sm^{-1} D) 3400 sm^{-1}

8, c. 379

53. IQ-spektrlarda aromatik C–C bog'larning skelet tebranishlari qaysi sohada kuzatiladi?

- A) $1800\text{-}1700\text{ sm}^{-1}$ B) $2000\text{-}1900\text{ sm}^{-1}$
C) $1600\text{-}1500\text{ sm}^{-1}$ D) $1400\text{-}1300\text{ sm}^{-1}$

8, c. 379

54. Aromatik uglevodorodlar UB-spektrida λ_{maks} qaysi sohada kuzatiladi?

- A) 135-145 nm B) 180-300 nm C) 150-160 nm D) 165-175 nm

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	D	19	D	37	C
2	D	20	A	38	D
3	C	21	D	39	D
4	B	22	B	40	C
5	D	23	D	41	D
6	D	24	B	42	D
7	A	25	B	43	A
8	C	26	D	44	D
9	D	27	C	45	D
10	D	28	D	46	B
11	B	29	C	47	C
12	B	30	B	48	D
13	C	31	D	49	A
14	B	32	B	50	D
15	C	33	C	51	B
16	B	34	D	52	C
17	D	35	A	53	C
18	C	36	A	54	A

XVIII BOB. AROMATIK GALOIDBIRIKMALAR

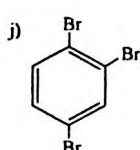
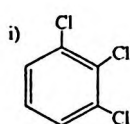
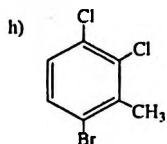
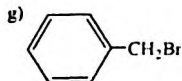
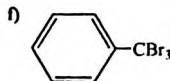
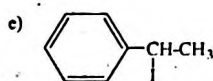
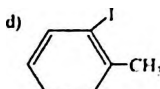
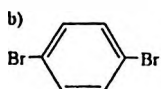
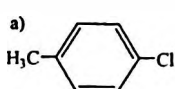
Aromatik galoidbirikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari o'ld masala va mashqlar

1. Xlorbenzol molekulasida xlor atomi bilan benzol halqasining o'zaro ta'sirlashuvi qaysi elektron effektlar vositasida amalga oshadi? Bu ta'sirlashuv C-Cl bog'ining tabiatiga qanday ta'sir ko'rsatadi?

2. Xlorbenzol, vinil xlorid, etil xlorid va benzil xlorid molekularidagi C-Cl bog'larning tabiati (energiyasi, uzunligi, dipol momenti) va nukleofil o'rin olish reaksiyalaridagi xlor atomining harakatchanligini taqqoslang.

3. Xlor benzolning mukammal strukturalari va mezoformulasini keltiring.

4. Quyidagi birikmalarni nomlang:



5. Quyidagi birikmalarni tuzilish formulalarini yozing: a) o-dibrombenzol, b) p-diyodbenzol, d) 4-bromftorbenzol, e) pentaftorlorbenzol, f) geksaftorbenzol, g) benzil xlorid. h) 2-xlor-4-nitrobenzol, i) p-metoksixlorbenzol, j) 2-brom-2-fenilpropan. k) ω -xlorstirol, l) 2,4-dinitrochlorbenzol.

6. Quyidagi birikmalarning tuzilish formulalarini yozing: a) brombenzol; b) p-xloroluol; d) benzil xlorid; e) p-dixlorbenzol; f) 1-yod-2-etilbenzol; g) 1-yod-1-feniletan; h) 1,3,5-tribrombenzol; i) benzotribromid. Arilgalogenid va arilalkilgalogenidlarni belgilang. Struktura izomerlarini ajrating.

7. a) C_7H_7Cl , b) $C_6H_4Br_2$, d) $C_6H_3I_3$ tarkibli birikmalarning mavjud hamma izomerlari tuzilish formulalarini yozing. Ularni nomlang.

8. a) tribrombenzollar va b) tetraxlorbenzollarning nechtdan izomeri bor? Ularning tuzilish formulalarini yozing va nomlang.

9. $C_7H_6Br_2$ tarkibli izomer arilgalogenid va arilalkilgalogenidlarning tuzilish formulalarini yozing.

10. 1,2-dibrom-1,2-difeniletanga nechta optik izomer to'g'ri keladi? Ularning proeksiya formulalarini yozing va nomlang.

11. Benzolning $FeCl_3$ katalizatorligida monoxlorlash reaksiyasi mexanizmini keltiring.

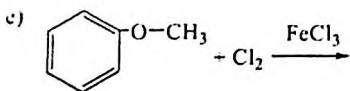
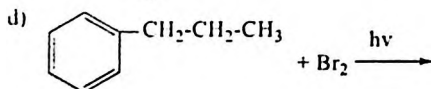
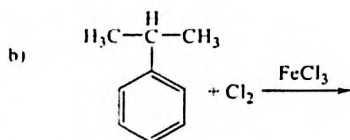
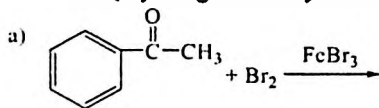
12. Quyidagi birikmalarning katalizator ishtirokida xlorlanish reaksiyalari tenglamalarini yozing: a) toluol, b) etilbenzol, d) nitrobenzol. e) brombenzol.

13. Toluol va xloridan benzyl xlorid olish reaksiyasi qanday sharoitda boradi? Bu reaksiyaning mexanizmini yozing. Reaksiya natijasida qanday birikmalar hosil bo'ladi? Agar shu sharoitda etilbenzol xlorlansa, xlor qaysi o'rinni egallaydi?

14. Benzol va boshqa reagentlardan foydalanib, a) m-dixlorbenzol; b) p- yodxlorbenzol; d) 3- fluor- 4- brom uchlamchibutilbenzolni sintezlash sxemalarini yozing. Oraliq mahsulotlarni nomlang.

15. Uch xil usul bilan benzoldan yodbenzol oling. Bu reaksiyalarning borih sharoitlarini ko'rsating.

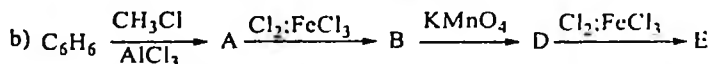
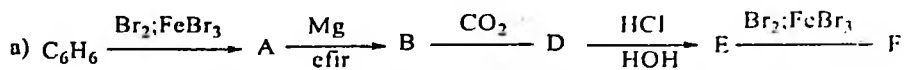
16. Quyidagi reaksiyalarni oxirigacha yetkazing:



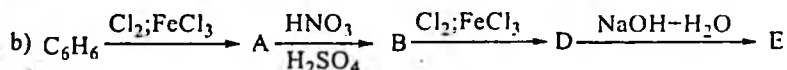
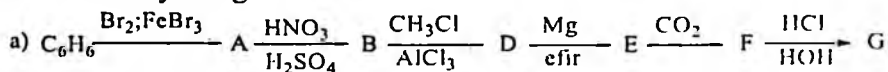
17. Quyidagi birikmalarni sintez qilish sxemalarini tuzing:

- a) *p* – nitroxlörbenzolni; b) *m* – nitroxlörbenzolni;
 d) *m* – xlörbenzotrixlörnidni; e) 2,5 - dixlörnitrobenzolni.

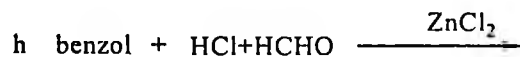
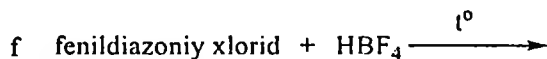
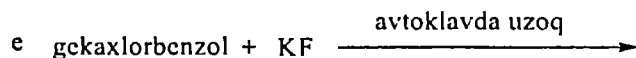
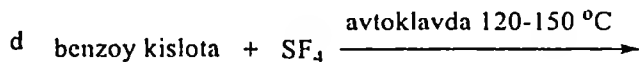
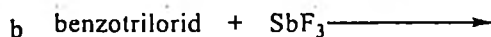
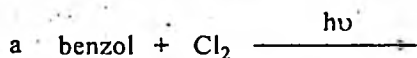
18. Quyidagi reaksiyalar oraliq va oxirgi mahsulotlari tuzilish formulalarini yozing :



19. Quyidagi reaksiyalar oraliq va oxirgi mahsulotlari tuzilish formulalarini yozing :



20. Quyidagi reaksiyalar tenglamalarini oxirigacha yetkazing:



21. Quyidagi sintezlarni amalga oshiring:

a) Benzol \rightarrow *p*-brom sterol

b) Toluol \rightarrow *p*-bromfenilsirka kislotaning etil efiri

- d) Toluol \rightarrow 2-brom-4-nitrobenzoy kislota
e) brombenzol \rightarrow p-nitrobenzoy kislota nitrili.

22. Toluolni qaynash haroratida xlorlab, benzil xlorid va benzoliden xloridning nisbiy zichligi 1.13 ga teng aralashmasi olinadi. Benzil xloridning zichligi 1.09, benziliden xloridniki esa 1.25. Aralashmaning foiz tarkibini hisoblang.

23. FeBr_3 katalizatorligida 7,8 g benzol 32 g brom bilan reaksiyaga kiritiladi. Olingan brom reaksiyaga to'liq kirishganda qanday birikmalar hosil bo'ladi?

24. Brombenzol va boshqa reagentlardan foydalanib, a) p-bromnitrobenzol, b) p-xlorbrombenzol, d) p-brombenzolsulfokislota, e) 1.2.4-tribrombenzol, f) 2,4-dinitrofenol, g) benzol, h) p-bromtoluol, i) benzoy kislotani olish semalarini yozing.

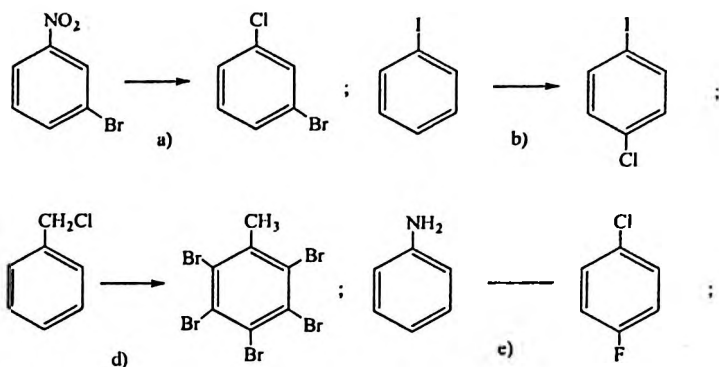
25. a) p-nitroxlorbenzol, b) m- nitroxlorbenzol, d) xlorbenzol, e) 2,4-dinitroxlorbenzol, f) 2,4,6-trinitroxlorbenzol, g) p-aminoxlorbenzolni bimolekulyar nukleofil o'rin olish reaksiyalariga kirishish qobiliyatining oshib borish tartibida joylashtiring va javobingizni nukleofil o'rin olish reaksiyalarida hosil bo'ladigan karbanionlarining barqarorligini taqqoslash bilan asoslang.

26. Arilgalogenidlardagi galogen atominingbimolekulyar nukleofil almashnish ($\text{S}_{\text{N}}2$ aromat) mexanizmini xlorbenzol misolida tushuntiring va uni alkilgalogenidlardagi galogenning bimolekulyar almashnish mexanizmi bilan taqqoslang. Bu reaksiyalarning energetik diagrammalarini keltiring.

27. Xlorbenzolning kaliy amid (suyuq ammiakda) bilan reaksiyasi misolida ajralib chiqish – biriktirib olish mexanizmini mohiyatini tushuntiring.

28. Benzil xloridga a) H_2O , t° ; b) NaOH (suvda qizdirish bilan); d) NH_3 (spirta qizdirish bilan); NaNO_2 (DMFA da); e) KCN (spirta qizdirish bilan) ni ta'sir ettirilganda boradigan reaksiyalar sxemalarini yozing.

29. Quyidagi sintezlarni amalga oshiring:



Bu reaksiyalarning kechish sharoitlarini ko'rsating, oraliq va oxirgi organic mahsulotlarni nomlang.

30. $C_7H_6Cl_2$ tarkibli birikmani ishqoriy gidroliz qilinganda C_7H_6O tarkibli aldegid, kaliy permanganate bilan oksidlanganda esa ishqorlar bilan reaksiyaga kirishib, tuz hosil qiladigan $C_7H_6O_2$ tarkibli modda hosil bo'ladi. Dastlabki moddaning tuzilishini aniqlang.

31. Quyidagi birikmalarning gidroliz reakstiyalari sxemalarini yozing :

- p*-bromtoluolning ;
- 2,4-dinitrobrombenzolning ;
- 1-brom-1-fenilpropaning.

Qaysi birikmaning gidrolizi oson boradi ?

32. *p*-xlortoluolni qizdirish bilan (katalizatorsiz) xlorlab olingan tarkibida ikki atom xlor bo'lgan modda sodali suvda qaynatilsa qanday birikma hosil bo'ladi.

33. Benzilxloridning quyidagi reagentlar bilan reaksiyasini yozing:

- H_2O , t; b) $NaOH + H_2O$, t; d) NH_3 spirtida, t; e) $C_6H_5N(CH_3)_2$, t; f) $NaNO_2$; g) KCN spirtida, t.

34. Qanday reagentlar ta'sirida va qanday sharoitda *p*-metoksilorbenzol, *p*-nitroxlorbenzol va *p*-metilbenzilxloridlar xlor atomini quyidagi guruhlariga almashtirish mumkin: a) $-OCH_3$, b) $-N(CH_3)_2$, d) $-CN$.

35. Gidrolizlanganda 4-lor-3-metilbenzoy kislotani hosil qiladigan $C_8H_6Cl_4$ tarkibli moddaning tuzilish formulasini yozing.

Aromatik galoidbirikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. Galogenidlarining qaysi birida uglerod – galogen bog'i eng mustahkam?

- A) allil xloridida B) etil xloridida
C) xlorbenzolda D) benzil xloridida

10, 2. c. 237-238; 26, 134-b.

2. O'zaro mezomer bo'lgan nechta tribrombenzol bor.

- A) 7 ta B) 6 ta C) 5 ta D) 3 ta

6, 272- va 275-b; 18, 407-b; 26, 53-b.

3. $C_7H_6Br_2$ tarkibli izomer arilgalogenidlarining soni nechta?

- A) 4 ta B) 5 ta C) 6 ta D) 7 ta

6, 275-b.

4. $C_7H_6Br_2$ tarkibli arilalkilgalogenidlarining nechta izomeri bor?

- A) 8 ta B) 7 ta C) 6 ta D) 4 ta

6, 275-b.

5. C_7H_7Cl tarkibli izomer aril – va arilalkilxloridlarning jami soni nechta?

- A) 4 ta B) 5 ta C) 6 ta D) 7 ta

6. Benzolning $FeCl_3$ katalizatorligida monoxlorlanish reaksiyasi qanday mexanizmida boradi?

- A) S_N1 B) S_N2 C) S_R D) S_{EAr}

26, 127-b.

7. Toluolni yorug'lik ta'sirida qizdirish bilan xlorlanishi qanday mexanizm bo'yicha boradi?

- A) S_N1 B) S_N2 C) S_R D) A_N

26, 131-b.

8. Arenlarni bevosita yodlash qanday sharoitda amalga oshiriladi?

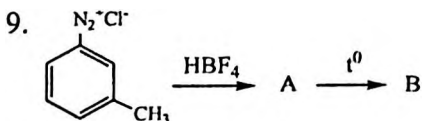
- A) FeI_3 katalizatori ishtirokida yod bilan qizdirish

- B) Fe va I_2 ta'sirida

- C) molekulyar yod bilan 60-70°C gacha qizdirish

D) Oksidlovchilar (HNO_3 , HIO_3 , $HNO_3+H_2SO_4$, H_2O_2 va boshqalar) ishtirokida molekulyar yod bilan

26, 129-130-b.

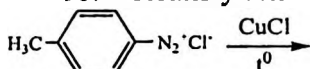


Reaksiyalarning oxirgi (B) mahsulotini nomlang.

- A) *m*-ftortoluol B) *o*-ftortoluol
 C) *p*-ftortoluol D) *m*-xlortoluol

15, c. 738-739; 18, 421-422-b.

10. Reaksiya mahsulotini nomlang.



- A) benzil xlorid B) *p*-xlortoluol
 C) *m*-xlortoluol D) *o*-xlortoluol

6, 271-b; 15, c. 739; 18, 421-b.

11. *p*-yodtoluolni olish uchun qaysi diazoniyl xloridni kaliy yodid bilan qizdirish kerak?

- A) fenildiazoniyl xloridni B) *o*-tolildiazoniyl xloridni
 C) *m*-tolildiazoniyl xloridni D) *p*-tolildiazoniyl xloridni

6, 271-b; 15, c. 738

12. Arilgalogenidlardagi galogen atomi qanday effekt(lar) namoyon qiladi?

- A) faqat $-M$ - effekt B) faqat $+M$ - effekt
 C) faqat $-I$ - effekt D) $+M$ va $-I$ - effekt

26, 73-74-b.

13. Birikmalarning qaysi birida uglerod-xlor bog'ining qutbligi eng kam?

- A) etil xloridida B) xlorbenzolda
 C) allil xloridida D) benzil xloridida

3, c. 239

14. Birikmalarning qaysi birining qaynash harorati nisbatan eng yuqori?

- A) etil xloridning B) yodbenzolning
 C) brombenzolning D) xlorbenzolning

26, 136-b.

15. Birikmalarning qaysi biri S_N2 reaksiyalariga nisbatan eng oson kirishadi?

- A) xlorbenzol B) *p*-nitroxlorbenzol

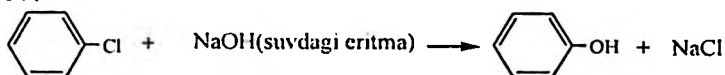
- C) *m*-nitroxlорbenzol D) 2,4,6-trinitroxlорbenzol
 10, 2, c. 244-245; 15, c. 796-797; 26, 139-b.

16. Birikmalarning qaysi biri S_N2 reaksiyalariga nisbatan eng qiyin kirishadi?

- A) *p*-aminoxlorbenzol B) 2,4,6-trinitroxlорbenzol
 C) xlorbenzol D) *p*-nitroxlорbenzol

10, c. 244-245; 15, c. 796

17.



Reaksiya qanday haroratda boradi?

- A) 20⁰C B) 60⁰C C) 300-340⁰C D) 120⁰C
 26, 134-135-b.

18. Xlorbenzol yoki brombenzolni KNH₂ yoki NaNH₂ bilan aminlab, anilin hosil qilish reaksiyasi qanday mexanizmدا boradi?

- A) faqat S_N1 B) faqat S_N2 C) E2

D) ajralish-birikish (arin) mexanizmi (degidrobenzol hosil bo'lishi bilan boradigan mexanizm)

10, 2. c. 250-251; 26, 135-136-b.

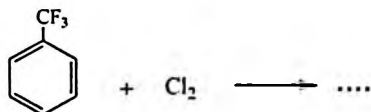


Reaksiyalarning oxirgi (C) mahsuloti qanday organik modda?

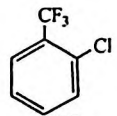
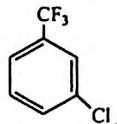
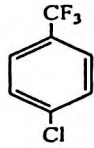
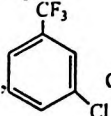
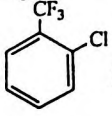
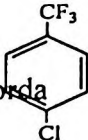
- A) benzaldegid B) benzoy kislota
 C) *o*-toluol kislota D) *p*-toluol kislota

21, c. 331

20.



Qanday tuzilishli birikma(lar) hosil bo'ladi?

- A) faqat  B) faqat  C) faqat 
 D) Asosan,  ozroq miqdorda  hamda kam miqdorda 

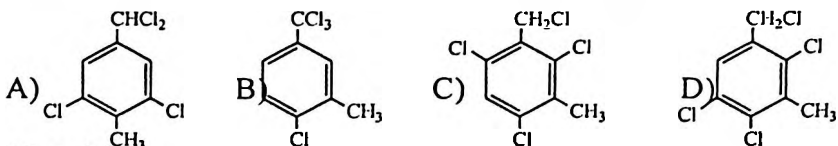
22, c. 381-382

21. Benziliden xlorid (benzodixlorid) ni o'yuvchi natriyning spirtidagi eritmasi bilan gidrolizlanganda qanday organik modda(lar) hosil bo'ladi?

- A) benzoy aldegid B) benzoy kislota
C) benzil spirt D) benzil spirt va benzoy kislota

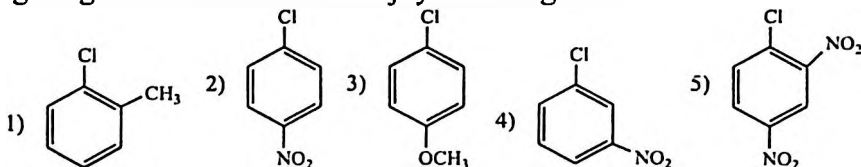
22, c. 381

22. Gidrolizlanganda 3-metil-4-xlorbenzoy kislotani hosil qiladigan $C_8H_6Cl_4$ tarkibli birikmaning tuzilishi qanday?



22, c. 381

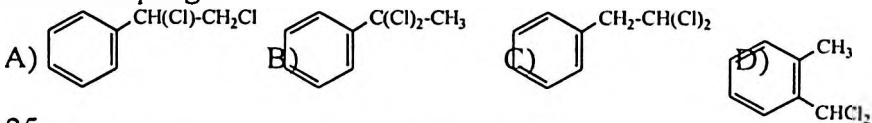
23. Birikmalarni nukleofil almashinish reaksiyalarida xlor atomi faolligining oshib borish tartibida joylashtiring.



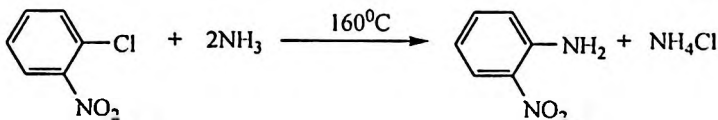
- A) $5 < 4 < 2 < 1 < 3$ B) $5 < 2 < 4 < 3 < 1$ C) $5 < 3 < 2 < 4 < 1$ D) $3 < 1 < 4 < 2 < 5$

15, c. 796-797; 18, 438-440-b.

24. $C_8H_8Cl_2$ birikma $Ca(OH)_2$ ishtirokida suv bilan qaynatilganda C_8H_8O moddani hosil qiladi. C_8H_8O PMR-spektrida - 2,4 m.h. (3H) li singlet va - 7 m.h. (5H) li multiplet bor. $C_8H_8Cl_2$ birikmaning tuzilishini aniqlang.



25.



Reaksiya qanday mexanizmda boradi?

- A) ajralish-birikish (arin) mexanizmda
B) S_N2Ar birikish-ajralish bimolekulyar mexanizmda

17. Quyidagi birikmalarni kislotaliligining oshib borishi tartibida joylashtiring; a) m- nitrofenol; b) fenol; d) p- nitrofenol. Javobingizni elektron effektlar vositasida asoslang.

18. Quyidagi birikmalarni nitrolash reaksiyasi tezligining oshib borishi tartibida joylashtiring: a) xlorbenzol; b) toluol; d) benzol: e) m-dixlorbenzol. Javobingizni asoslang.

19. Xlorbenzolga ketma-ket nitrogurux kiritilganda qanday birikmalar hosil bo'ladi?

20. a) toluol; b) uchlamchibutilbenzol; d) fenol; e) mezytilen nitrolapganda asosiy ma[^]sulot sifatida k, anday mononitrobirikmalar hosil buladi.

21. Ishqor bilan isitilganda $C_7H_7O_3N$ birikmasiga aylanadigan $C_7H_6O_2NCl$ birikmasining tuzilishini aniqlang, uning oksidlanishi natijasida $C_7H_5NO_4$ tarkibidagi kislota hosil bo'ladi. Boshlang'ich materialning galogenatsiyasi bitta izomerga olib keladi.

22. Fenilnitrometan va 2-nitrotoluolni qanday reaksiyalar yordamida ajratish mumkin? Ushbu birikmalarni ajratishning kimyoviy usulini taklif qiling.

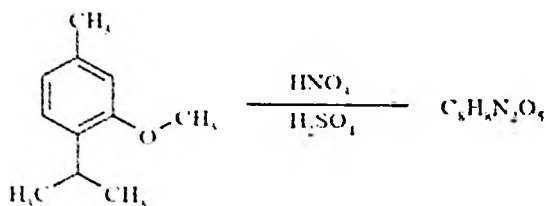
23. Molekularida vodorod atomlari deyteriy yoki tritdiy bilan almashtirilgan benzol, toluol, bromobenzol, nitrobenzol va naftalinni nitrlashda kH / kT (yoki D) nisbati odatda 1 ga juda yaqin va odatda 3 dan oshmasligi aniqlandi. Taqdim etilgan ma'lumotlarga asoslanib reaksiya tezligini belgilaydigan bosqich haqida qanday xulosalar qilish mumkin?

24. Konsentrlangan nitrat kislota bilan nitratlanish darajasi nitrat kislota tuzlari (masalan, $NaNO_3$) qo'shilganda keskin pasayib. konsentrlangan sulfat kislota qo'shilganda ortib borishini tushuntiring.

25. Aromatik birikmalarni nitrat kislota bilan nitrolash paytida qanday yon reaksiyalar kuzatiladi?

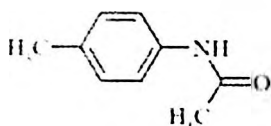
26. Galogenbenzenlarni nitrlash natijasida olingan orto va para-izomerlarning nisbati qanday omillarga ta'sir qiladi?

27. Quyidagi reaksiyada hosil bo'lgan mahsulot uchun strukturaviy formulani taklif qiling:

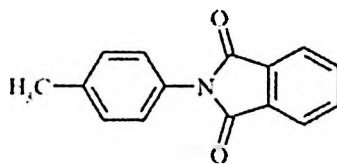


28. 3-nitrobenzensulfonik kislota ishlab chiqarishning qaysi usuli maqbuldir: benzensulfonik kislotani nitratlash yoki nitrobenzolni sulfatlash?

29. I va II birikmalarni nitrash paytida yo'nalish qanday o'zgarishi kerak:



I



II

O'rinbosarlarni ftalimid yadrosiga kiritish jarayonning yo'nalishiga qanday ta'sir qilishi kerak?

Aromatik nitrobirikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. $\text{C}_7\text{H}_7\text{NO}_2$ tarkibli aromatik nitrobirikmalarning nechta izomeri bor?

A) 3 ta B) 4 ta C) 5 ta D) 6 ta

2. Izomer dinitrotoluollarning soni nechta?

A) 4 ta B) 5 ta C) 6 ta D) 7 ta

6. 280- va 283-b.

3. Dinitrobenzollar nechta izomer holida uchraydi?

A) 7 ta B) 6 ta C) 4 ta D) 3 ta

18. 407-b; 26, 53-b.

4. Izomer trinitrobenzollar soni nechta?

A) 3 ta B) 4 ta C) 5 ta D) 6 ta

18. 407-b; 26, 53-b.

5. Benzolni nitrolovchi aralashma (kons. HNO_3 + kons. H_2SO_4) bilan nitrolash qanday mexanizmida boradi?

- A) $\text{S}_{\text{N}}1$ B) $\text{S}_{\text{N}}2$ C) E_1 D) $\text{S}_{\text{E}}2$

6, 283-284-b; 26, 150-b.

6. Birikmalardan qaysi biri nisbatan eng oson nitrolanadi?

- A) benzol B) toluol C) *m*-dixlorbenzol D)

nitrobenzol

18, 434-435-b.

7. Birikmalardan qaysi biri nisbatan eng qiyin nitrolanadi?

- A) benzol B) toluol C) mezitilen D) nitrobenzol

18, 434-435-b.

8. Benzolni qaysi reagent bilan nitrolaganda 1,3,5-trinitrobenzol oson hosil bo`ladi?

konsentrlangan nitrat kislota

nitrolovchi aralashma (HNO_3 + H_2SO_4)

konsentrlangan nitrat va sirka kislota aralashmasi

D) nitroniy tetraftorborati $[\text{NO}_2^+]\text{BF}_4^-$

6, 284-285-b; 26, 158-b.

9. Arenlarni nitrolovchi aralashma (kons. HNO_3 va kons. H_2SO_4 aralashmasi) bilan nitrolaganda, yadroga hujum qiluvchi nitrolovchi reagentni aniqlang.

- A) HNO_2 B) O_2NO^+ C) $\cdot\text{NO}_2$ D) NO_2^-

2, *τ*.1, c. 418; 3, c. 378-379; 26, 150-151-b.

10. Toluolni 120-130 $^{\circ}\text{C}$ da suyultirilgan nitrat kislota ta'sirida nitrolash qanday mexanizmida boradi?

- A) $\text{S}_{\text{E}}1$ B) $\text{S}_{\text{N}}2$ C) S_{R} D) A_{E}

18, 435-436-b.

11. Nitrobenzol molekulasida nitroguruh bilan benzol yadrosining o`zaro ta`sirlashuvi qanday effekt(lar) hisobiga amalga oshadi?

A) faqat + I B) faqat + M (σ , π -)

C) faqat + M (π -, π -) D) -I va -M (π , π)

3, c. 380; 6, 283-b; 26, 76-b.

12. Nitrobenzolning nitroguruhi elektrofil reagentlarni yadroning qaysi holat(lar)iga yo`naltiradi?

A) asosan *o*-holatga

B) asosan *p*-holatga

C) asosan *m*-holatga

D) asosan *o*- va *p*-holatlarga

26, 77-78-b.

Testlarning javoblari

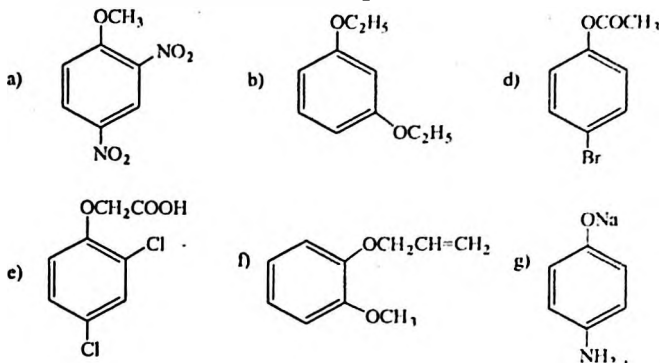
Test	Javob	Test	Javob	Test	Javob
1	D	7	A	13	B
2	A	8	C	14	A
3	C	9	D	15	D
4	C	10	B	16	D
5	B	11	A	17	D
6	B	12	B	18	C

XX BOB. AROMATIK UGLEVODORODLARNING GIDROKSILLI HOSILALARI

Aromatik uglevodorodlar gidroksilli hosilalarining
nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalriga oid
masala va mashqlar

- Quyidagi birikmalarning tuzilish formulalarini yozing:
 - 2-izopropil-5-metilfenol;
 - 2,5 – dimetil – 1 – gidroksibenzol
 - fenoldisulfokislota – 1,4 ;
 - p* – metoksifenol;
 - 4-allil-2- metoksifenol.
- Quyidagi sintezlar sxemasini tuzing :
 - Toluol \longrightarrow *o*- krezol ;
 - Toluol \longrightarrow floroglyutsin
 - izopropilbenzol \longrightarrow 2,6-dibrom-4-izopropilfenol
 - fenilmagniy bromid \longrightarrow fenol
- Fenollar deb qaysi moddalarga aytiladi? Fenolning gomologining formulasini yozing.
- C_7H_8O tarkibli izomer aromatik birikmalarning tuzilish formulalarini yozing. Har qaysi izomerlarning organik birikmalarning qaysi sinflariga kirishini ko'rsating.
- Ikkita gidroksil guruhi saqlagan biror bir fenolning formulasini yozing.
- Quyidagilarning orasidan fenollarga mos keladigan formulalarni ajrating: C_6H_6O ; $C_6H_6O_3$; $C_6H_{12}O$; C_7H_8O ; $C_7H_{14}O$; $C_6H_{14}O$. Tanlangan fenollarning formulalarini yozing. Ularning har birining nechtadan izomeri bor?
- 14.7 g fenol bilan benzolning gomologi bo'lgan aromatik uglevodorod aralashmasi bromli suv bilan ishlov berildi. Bunda 33,1 g cho'kma tushdi. Fenol bilan uglevodorodning aralashmadagi molyar nisbatlari 2:1 bo'lsa, aromatik uglevodorodning izomerlarining formulalarini yozing.
- Quyidagi birikmalarning struktura formulalarini yozing:
 - anizol (metilfenilefir);
 - fenetol (etilfenilefir);
 - difenil efiri;
 - allilfenil efir;
 - fenilatsetat;
 - fenilbenzoamin;
 - fenoksisirka kislota;
 - natriy fenolyat. (Suvorov,220-b)

9. Quyidagi birikmalarni nomlang:



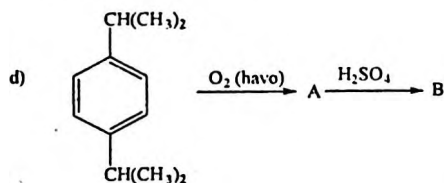
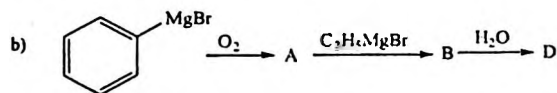
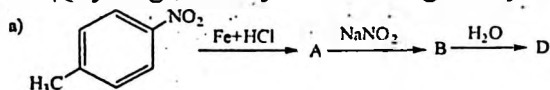
10. Istalgan neorganik moddalardan va katalizatoridan foydalanib metandan 2,4,6-trinitrofenol hosil qiling.

11. Benzoldan foydalanib, quyidagi moddalarni sintez qiling: a) p-nitrofenol; b) tribromfenol; d) anizol(metilfenilefir); e) o-aminofenol;

12. Toluol va boshqa moddalardan floroglusinni sintez qiling.

13. Kumol va boshqa moddalardan 2,6-dibrom-4-izopropilfenolni sintez qiling.

14. Quyidagi reaksiyalarni oxirigacha yetkazing:



15. o-bromtoluoldan olingan magniyorganik birikma bilan sirka aldegid reaksiyaga kirishganda qanday aromatik spirt hosil bo`ladi?

16. Quyidagi birikmalarni kislotalik xossalarning kuchayib borishi tartibida joylashtiring:

a) pikrin kislota; b) fenol; d) *o*-krezol; e) *p*- nitrofenol; f) 3,4-dinitrofenol;

17. Fenollarning spirtlardan farq qiladigan asosiy xossasini ko'rsating.

18. Kimyoviy yo'l bilan butanolni fenoldan qanday ajratish mumkin?

19. Nima uchun fenollarning kislotalik xossalari spirtlarnikidan yuqori bo'ladi? Qaysi reaksiya bilan buni isbotlash mumkin?

20. Anilinni fenol qo'shimchasidan qanday tozalash mumkin? Reaksiyalarni sxema tarzida ko'rsating.

21. 1500 g 25% li natriy fenolyatdan olish mumkin bo'lgan fenolning massasini toping. Eritmani qaysi modda bilan ishlov berish kerak? Reaksiyalarning tenglamalarini yozing.

22. Fenolning yadrosining reaksiyon qobiliyati aromatik uglevodorodlarnikidan yuqori bo'lishining sababi nimada? Qaysi reaksiya bilan buni isbotlash mumkin?

23. Elektronodonor va elektronoaktseptor o'rinbosarlar fenollarning kislotaligiga qanday ta'sir ko'rsatishini misolar bilan tushuntiring.

24. 300 g 1,5% li kaliy gidroksid eritmasiga metilfenol qo'shildi, moddalar to'liq reaksiyaga kirishdi. Eritmada hosil bo'lgan moddaning massa ulushini toping.

25. 28.2 g fenolni kislota ishtirokida mo'l miqdordagi formaldegid bilan ta'sir ettirildi. Bunda 5,116 g suv hosil bo'ldi. Polikondensatlanish reaksiyasida faqat chiziqli mahsulot hosil bo'lib, fenol to'liq reaksiyaga kirishsa hosil bo'ladigan yuqori moddaning o'rtacha molekulyar massasini toping.

26. 28.2 g fenol kislota ishtirokida ortiqcha formaldegid bilan qizdirilganda 5,116 g suv hosil bo'ldi. Fenol reaksiyaga to'liq kirishgan va polikondensatlanish faqat chiziqsimon borgan deb hisoblab, olingan yuqori molekulyar reaksiya mahsulotining o'rtacha molekulyar massasini aniqlang.

27. Organik modda eterifikatsiya reaksiyasiga kirishsa ham, yaqqol ifodalangan kislota xossalariga ega emas, brom bilan n.sh.da reaksiyaga kirishmaydi. U yondirilganda 2,64 g karbonat angidrid va 1.44 g suv hosil bo'lsa, moddaning formulasini toping.

28. Fenol bilan sirka kislota aralashmasini neytrallash uchun 23,4 ml 20% li (zichligi 1,2 g/ml) kaliy gidroksid eritmasi sarflandi.

Boshlang'ich aralashma bromli suv bilan reaksiyaga kirishganda 16,55 g cho'kma hosil bo'ldi. Aralashmadagi moddalarning massalarini toping.

29. Etil spirti bilan fenolning aralashmasiga natriy ta'sir ettirilganda 6,72 l vodorod (n.sh.) ajraldi. Bu aralashmani to'liq neytrallash uchun esa, 25 ml 40% li (zichligi 1,4 g/ml) kaliy gidroksid eritmasi sarflandi. Aralashmadagi moddalarning massa ulushlarini toping.

30. Fenol va 2-xlorethanoldan tashkil topgan 17,45 g aralashmaga natriy metalli ta'sir ettirilganda 14,4 g mis(I)-oksidini qaytarish uchun yetarli miqdorda vodorod ajraldi. Aralashmadagi moddalarning massa ulushlarini toping.

31. 2,56 l (n.sh.) atsetilenni gidrogenlash uchun yetarli miqdorda vodorod olish uchun mo'l miqdordagi natriy bilan 9,4% li (zichligi 0,9 g/ml) fenolning etanoldagi eritmasidan necha millilitr olish kerak?

**Aromatik uglevodorodlar gidroksilli hosilalarining
nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari,
spektroskopiyasiga oid testlar va ularni yechish uchun
adabiyotlarga havolalar**

1. $C_8H_{10}O$ tarkibli izomer aromatik spirtlar soni nechta?

A) 3 ta B) 4 ta C) 5 ta D) 6 ta

6, 296- va 300-b.

2. $C_6H_6O_3$ tarkibli uch atomli fenol (arentriol) larning nechta

izomeri bor?

A) 7 ta B) 6 ta C) 5 ta D) 3 ta

3, c. 323; 6, 296- va 300-b.

3. $C_8H_{10}O$ tarkibli bir atomli fenol (arenol) larning nechta izomeri bor?

A) 3 ta B) 4 ta C) 5 ta D) 6

ta

3, c. 313

4. Dunyo miqyosida ishlab chiqariladigan fenolning (bir yilda 1,5-2 mln. t.) necha foizi toshko'mir smolasidan olinadi?

A) 25 % B) 20 % C) 15 % D) 10 %

3, c. 322

5. Dunyo miqyosida ishlab chiqariladigan fenolning (bir yilda 1,5-2 mln. t.) necha foizi sintetik usullar bilan olinadi?

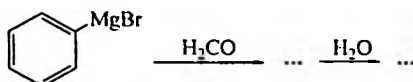
- A) 75 % B) 90 % C) 85 % D) 80 %
3, c. 322

6. Sintetik fenolning 50 foizdan ortig'i qaysi usulda olinadi?

- A) benzolsulfokislota tuzlarini ishqor (NaOH, KOH) bilan suyuqlantirish
B) yuqori harorat va bosimda xlorbenzolga NaOH ta'sir ettirish
C) fenildiazoniy tuzi suvdagi eritmasini qizdirish
D) kumol jarayoni. Izopropilbenzol (kumol)ni oksidlab olish (Udris-Sergeyev usuli)

3, c. 322

7.



Reaksiyalarning oxirgi mahsuloti qanday gidroksilli organik modda?

- A) o-krezol B) m-krezol C) benzil spirt D) p-krezol
18, 453-b.

8. Fenollardagi gidroksil guruhining kislorod atomi qanday effekt(lar) namoyon qiladi?

- A) faqat -I effekt B) faqat -M effekt
C) +I va -M effektlar D) -I va + M effektlar

3, c. 315; 26, 185-186-b.

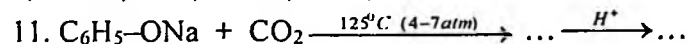
9. Fenollarning qaysi birida kislotalik xossalar nisbatan eng kuchli?

- A) fenolda B) 3,4-dinitrofenolda
C) m-krezolda D) 2,4,6-trinitrofenolda

6, 298- va 301-b; 18, 446-447-b; 26, 187-b.

10. Fenollarning murakkab efirlarini alyuminiy xlorid bilan qizdirilganda o- va p-oksifenilketonlarga qayta guruhlanadi. Bu kimning qayta guruhlanishi?

- A) Fris B) Fritsshe C) Frich D) Folgard
3, c. 319; 11, c. 314; 15, c. 764-765



Reaksiya qaysi olimning nomi bilan yuritiladi?

- A) Kekule B) Kolbe C) Karrer D) Kiliani

10, 2, c. 313; 15, c. 768

12. Birikmalardan qaysi biri elektrofil reagentlar bilan nisbatan eng oson reaksiyaga kirishadi?

- A) benzol B) toluol C) kumol D) fenol

3, c. 318

13. Fenollar IQ-spektrlarida O–H bog`ning valent tebranishlari qaysi sohada kuzatiladi?

- A) 3200-3600 sm^{-1} B) 3000-3100 sm^{-1}
C) 2900-2980 sm^{-1} D) 2800-2890 sm^{-1}

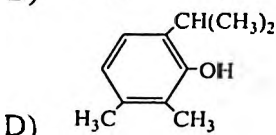
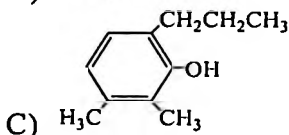
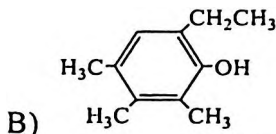
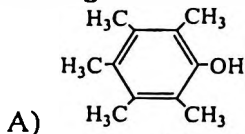
15, c. 771

14. Fenollar IQ-spektrlarida C–O bog`ning valent tebranishlari qaysi sohada kuzatiladi?

- A) 1900-1950 sm^{-1} B) 1800-1870 sm^{-1}
C) 1750-1790 sm^{-1} D) 1230 sm^{-1} ga yaqin

15, c. 771

15. $\text{C}_{11}\text{H}_{16}\text{O}$ tarkibli birikma ishqorlar bilan tuz hosil qiladi, temir xlorid bilan rangli reaksiya beradi. PMR-spektrida δ 2,1 va 4,2 m.h. sohada (intensivliklar nisbati 15:1) ikkita singlet signal bor. Moddaning tuzilishini aniqlang.



17, c. 90

16. 108(100), 107(95), 91(6), 90(12), 79(30), 78(8), 77(28), 63(10), 53(17), 52(8), 51(18), 50(10), 39(35), 38(17) m/z li cho`qqilar bor mass-spektr qaysi birikmaniki?

- A) benzil spirt B) m-krezol
C) metilfenilefir D) benzoy kislota

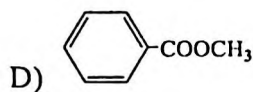
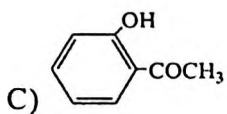
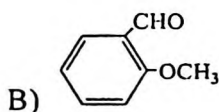
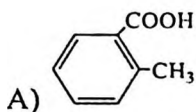
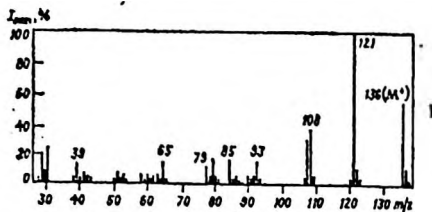
17, c. 125

17. UB-sohada fenol nechta yutilish maksimumiga ega va ular qaysi sohada yotadi?

- A) ikkita 210-270 nm B) bitta, 240 nm
C) ikkita, 180 va 190 nm D) bitta, 170 nm

8, c. 407

18. Quyidagi rasmda keltirilgan mass-spektr birikmalarning qaysi biriga ta'luqli?



17, c. 125

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	B	7	D	13	D
2	A	8	B	14	D
3	D	9	B	15	A
4	D	10	A	16	B
5	D	11	C	17	B
6	C	12	D	18	D

XXI BOB. AROMATIK KARBONIL BIRIKMALAR

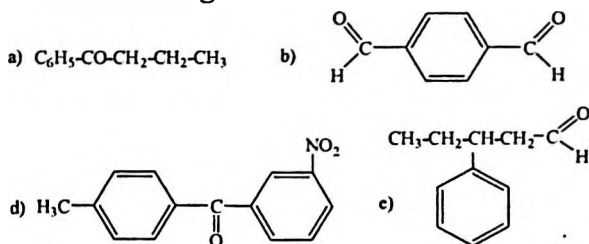
Aromatik karbonil birikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalariga oid masala va mashqlar

1. Birikmalarning tuzilish formulalarini yozing :

- a) 2 - fenilpropanal; b) fenilatseton;
 d) 2-fenil -2-metilpropanal; e) *o* – gidroksibenzaldegid (salitsil aldegid);

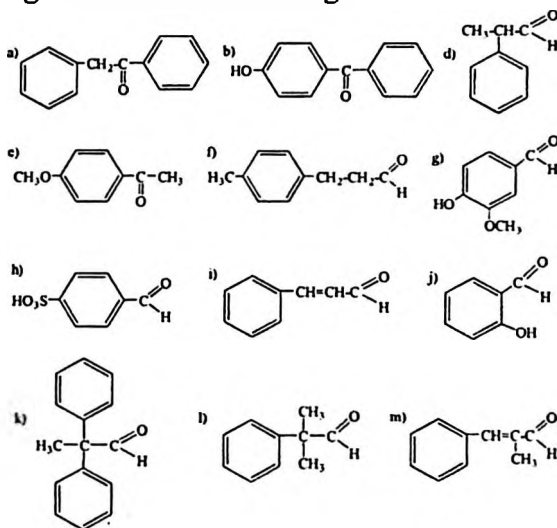
f) α -metildolchin aldegid ; g) 4 – formilbenzolsulfokislota.

2. Birikmalarni nomlang :



3. C_8H_8O tarkibli izomer aromatik aldegid hamda ketonlarning tuzilish formulalarini yozing va ularni nomlang.

4. Quyidagi birikmalarni nomlang:



5. Aromatik karbonil birikmalarning olinishiga oid masala va mashqlar.

6. Quyidagi spirtlar oksidlanganda hosil bo'ladigan birikmalarni nomlang:

- a) benzilmetilkarbinol ; b) *m* – gidroksibenzil spirt
d) fenilpropilkarbinol e) *p* – brombenzil spirt.

7. Quyidagi spirtlar oksidlanganda hosil bo'ladigan birikmalarni nomlang:

- a) *m*-gidroksibenzil spirt; b) β -feniletanol; d) propil fenil karbinol;
e) difenil karbinol; f) metilbenzil-karbinol

8. Quyidagi birikmalar gidrolizlanganda qanday moddalar hosil bo'ladi:

- a) metilbenzildixlormetan; b) 2,2-dibrom-1-fenilbutan; d) 2,2-dixlor-1-fenilpropan; e) 4,4-dixlor-1-fenilbutan; f) benziliden xlorid.

9. Benzol va boshqa moddalardan quyidagi birikmalarni sintez qiling:

- a) 2,4-digidroksibenzaldegid; b) *p*-gidroksiatsetofenon; d) benzofenon; e) 4-metoksi-4-xlorbenzofenon.

10. Benzaldegid bilan quyidagi birikmalar orasida boradigan reaksiyalar sxemalarini yozing . Hosil bo'ladigan organik moddalarni nomlang :

- a) Br_2 , FeBr_3 ; b) $(\text{C}_2\text{H}_5\text{CO})_2$, $\text{C}_2\text{H}_5\text{--COONa}$,
 Δ .

- d) HNO_3 , H_2SO_4 , Δ ; e) nitrometan ;
f) malon kislota dinitrili. g) metiletilketon ;

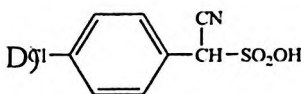
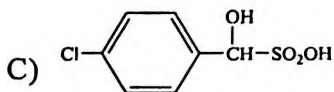
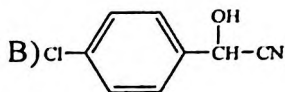
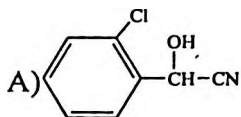
11. $\text{C}_9\text{H}_8\text{O}$ tarkibli modda bromli suvni rangsizlantiradi, kumush ko'zgu reaksiyasini beradi, kaliy permanganat bilan oksidlanganda benzoy kislota hosil bo'ladi. $\text{C}_9\text{H}_8\text{O}$ moddaning tuzilishini aniqlang.

12. Benzaldegid bilan quyidagi birikmalar orasida boradigan reaksiyalar sxemalarini yozing. Hosil bo'ladigan organik moddalarni nomlang :

- a) gidrazin; b) NaHSO_3 ; d) gidroksilamin; e) LiAlH_4 ; f) H_2 , Ni,
 Δ , bosim.

Aromatik karbonil birikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. *p*-xlorbenzaldegid $\xrightarrow[\text{HOH: } 10^{\circ}\text{C}]{\text{NaHSO}_4}$... $\xrightarrow{\text{KCN}}$...
 Reaksiyalar oxirgi mahsuloti tuzilishini aniqlang.



1, 4.3, c. 40

2. $\text{C}_9\text{H}_{10}\text{O}$ tarkibli aromatik ketonning nechta izomeri bor?

A) 2 ta; B) 3 ta; C) 4 ta; D) 5 ta

3. $\text{C}_8\text{H}_8\text{O}$ tarkibli aromatik aldegid va ketonlarning soni nechta.

A) 3 ta aldegid, 1 ta keton B) 4 ta aldegid, 1 ta keton

C) 3 ta aldegid, 2 ta keton D) 4 ta aldegid, 2 ta keton

6, 304- va 307-b.

4. Difenilmetanni suyultirilgan nitrat kislotaga bilan $\text{Pb}(\text{CH}_3\text{COO})_2$ ishtirokida oksidlab sanoatda qaysi modda olinadi?

A) atsetofenon;

B) butirofenon;

C) benzofenon;

D) etilfenilketon.

26, 220-221-b.

5. Benzol va propionil xlorid AlCl_3 ishtirokida reaksiyaga (Fridel-Krafts reaksiyasi) kirishganda hosil bo'ladigan birikmani nomlang.

A) benziletiketone

B) etilfenilketone

C) metilfenilketone

D) benzilmetiketone

6, 303-b; 26, 222-b.

6. Toluolni CO va HCl aralashmasi bilan AlCl_3 va CuCl ishtirokida formillaganda (Gatterman-Kox reaksiyasi) qaysi birikma hosil bo'ladi?

A) *o*-toluil aldegid

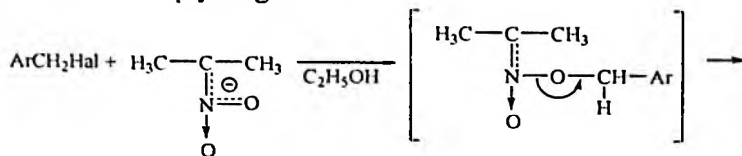
B) *m*-toluil aldegid

C) *p*-toluil aldegid

D) benzil aldegid

6, 307-b; 26, 222-b.

7. Benzilgalogenidlarni 2-nitropropan tuzlari yordamida oksidlash, aromatik aldegidlar olishning qulay umumiy usuli hisoblanadi va u quyidagicha boradi:



Bu usulni kim tavsiya qilgan?

- A) Ingold B) Xorner C) Xaak D) Xass

1, 4.3, c. 18

8. Aromatik halqa bilan bevosita bog`langan aldegid va karbonil guruhlari qanday effektlarni namoyon qiladi?

- A) +I va +M B) -I va +M C) -I va -M D) +I va -M

26, 223-b.

9. Aromatik halqa bilan bevosita bog`langan aldegid va karbonil guruhlari qanday o`rinbosar.

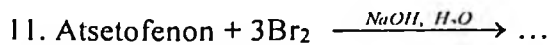
- A) $S_{\text{E}}\text{Ar}$ reaksiyalarida halqa faolligini oshirib, *o*- va *p*-holatlariga yo`naltiruvchi o`rinbosar
 B) $S_{\text{E}}\text{Ar}$ reaksiyalarida halqa faolligini kamaytirib, *o*- va *p*-holatlariga yo`naltiruvchi o`rinbosar
 C) $S_{\text{E}}\text{Ar}$ reaksiyalarida halqa faolligini kamaytirib, *m*-holatga yo`naltiruvchi o`rinbosar
 D) $S_{\text{E}}\text{Ar}$ reaksiyalarida halqa faolligini oshirib, *m*-holatga yo`naltiruvchi o`rinbosar

26, 227-b.

10. Aromatik aldegidlar o`yuvchi natriyning suyultirilgan (5-10% li) eritmalarida ishtirokida alifatik aldegid va ketonlar bilan aldol va krotan reaksiyalariga kirishib gidroksikarbonil birikmalarni hosil qiladi. Bu gidroksikarbonil birikmalarni ajratib bo`lmaydi, chunki ular xona haroratida ham oson degidratlanib, α,β -to`yinmagan aldegid va ketonlarni hosil qiladi. Bu kimning reaksiyasi?

- A) Kannitssaro B) Klyayzen-Shmidt C) Kucherov D) Kurts

2, 1.2, c. 167; 26, 224-b.



Reaksiya natijasida qaysi organik moddalar hosil bo'ladi?

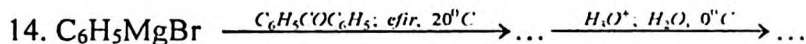
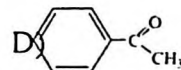
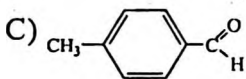
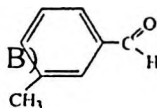
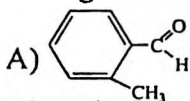
- A) natriy benzoat va metilbromid
- B) natriy benzoat va bromoform
- C) benzoy kislota va bromsirka kislotaning natriyli tuzi
- D) benziliden bromid va natriy atsetat

2, τ.2, c. 162

12. Benzaldegidning metiletilketon bilan kondensatsiyasi natijasida qaysi modda(lar) hosil bo'ladi?

- A) asosan C₆H₅-CH=CH-CO-CH₂-CH₃
- B) C₆H₅-CH=CH-CO-CH₂-CH₃ va C₆H₅-CH=C(CH₃)-CO-CH₃
- C) asosan C₆H₅-CH=C(CH₃)-CO-CH₃
- D) asosan C₆H₅-CH=CH-CH₂-CO-CH₃

13. Kumush-ko'zgu reaksiyasini beradigan, xromli aralashma bilan oksidlanganida tereftal kislotasini hosil qiladigan C₈H₈O tarkibli moddaning tuzilishini aniqlang.

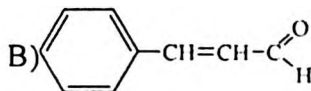
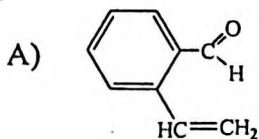


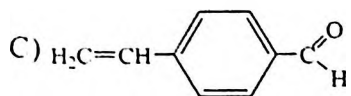
Reaksiyalar oxirgi mahsulotini nomlang.

- A) trifenilkarbinol
- B) trifenilatseton
- C) trifenilatsetaldegid
- D) trifenilmetilkarbinol

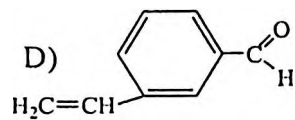
1, ч.3, c. 41

15. Bromli suvni rangsizlantiradigan, kumush-ko'zgu reaksiyasini beradigan, suvli eritmada kaliy permanganat bilan oksidlanib benzoy kislotani hosil qiladigan C₉H₈O tarkibli moddaning tuzilishini aniqlang.





6, 306- va 308-b.



Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	D	6	C	11	D
2	B	7	D	12	A
3	A	8	B	13	D
4	C	9	D	14	D
5	D	10	B	15	C

XXII BOB. AROMATIK KARBON KISLOTALAR

Aromatik karbon kislotalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalriga oid masala va mashqlar

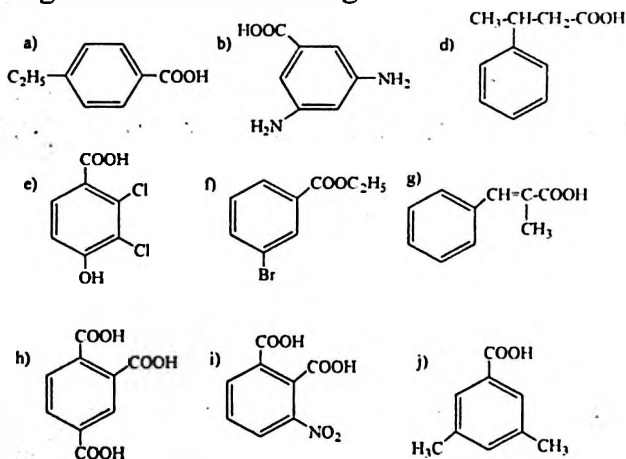
1. a) o-toluil kislota; b) m-toluil kislota; d) ftal kislota; e) mellit kislota; f) dolchin kislota; g) 2,4-dinitrobenzoy kislotalarning tuzilish formulalarini yozing.

2. Yon zanjirida karboksil guruh tutgan $C_9H_{10}O_2$ tarkibli aromatik kislotalarning tuzilish formulalarini yozing va nomlang.

3. Izomer monoxlorbenzoy kislotalarning tuzilish formulalarini yozing.

4. a) 3,5-dinitrobenzoil xlorid; b) fenilsirka kislota; d) p-nitrodolchin kislota; e) salisil kislotaning fenil efiri; f) izoftal kislota diamidi; g) β -fenilpropion kislotaning metil efiri tuzilish formulalarini yozing.

5. Quyidagi birikmalarni nomlang:



6. a) toluol; b) benzonitril; d) benzil spirt; e) benzotriklorid; f) magniyorganik birikmadan benzoy kislota olish reaksiyalari tenglamalarini yozing.

7. a) o-kxilol; b) p-kxilol; d) p-brompropilbenzol; e) o-xlortoluol; f) 1,2,4-trimetilbenzol; g) asetofenon; h) etil-p-tolilketon oksidlanganda qanday aromatic kislotalar hosil bo`ladi?

8. Benzol va boshqa moddalardan foydalanib a) *m*-xlorbenzoy kislota; b) *p*-xlorbenzoy kislota; d) benzoy kislotaning amidi; e) fenilsirka kislota xlorangidridini sintez qiling.

9. Magniyorganik birikmalar va boshqa reagentlardan foydalanib, a) *m*-etilbenzoy kislota; b) *p*-tolilsirka kislota; d) mezitelenkarbon (2.4.6-trimetilbenzoy)kislota; e) *p*-ikkilamchi butilbenzoy kislotani sintez qiling.

10. $C_{10}H_{14}$ tarkibli uglevodorodning oksidlanishidan benzoy kislota hosil bo'ladi. Bu uglevodorodning tuzilishini aniqlang.

11. *m*-va *p*-ksilollardan 2,4- va 2,5-dimetilbenzoy kislotalarni sintez qiling.

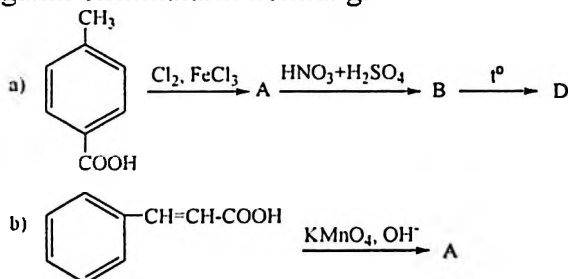
12. a) benzoy; b) *p*-toluil; d) *p*-xlorbenzoy; e) *p*-brombenzoy; f) *p*-nitrobenzoy; g) *p*-yodbenzoy; h) *p*-ftorbenzoy; i) *p*-gidroksibenzo kislotalarni kislotalilik xossalari kuchayib borishi tartibida joylashtiring. Javobingizni elektron effektlar yordamida asoslang.

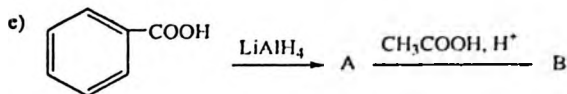
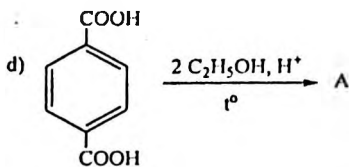
13. Benzoy kislotadan a) benzol; b) natriy benzoat; d) benzamid; e) *n*-propilbenzoat; f) *p*-tolilbenzoat; g) *m*-bromfenilbenzoat; h) benzil spirt; i) *m*-xlorbenzoy kislotaning izobutil efirini sintez qilish reaksiyalari tenglamalarini yozing.

14. Fenilsirka kislota va boshqa reagentlardan foydalanib:

a) *n*-propilfenilatsetat; b) fenilatsetilxlorid; d) fenilatsetamid; e) *p*-xlorfenilsirka kislota; f) *p*-nitrofenilsirka kislota; g) α -xlorfenilsirka kislota; h) β -feniletill spirtni sintez qilish reaksiyalari tenglamalarini yozing.

15. Quyidagi reaksiyalar tenglamalarini yozing. Unda hosil bo'ladigan organik birikmalarni nomlang.

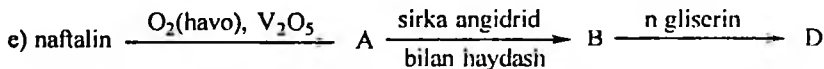
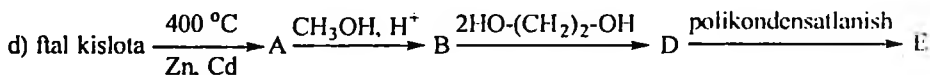
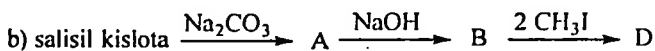
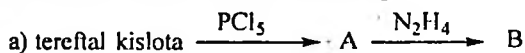




16. Benzoy, salitsil, *p*-gidroksibenzoy va 2,6-digidroksibenzoy kislotalarning pK_a kattaligi tegishli ravishda 4.20; 2.98; 4.58:1.30 ga teng. Bu kattaliklarning bir-biridan farq qilishlari sabablarini tushuntiring.

17. Salitsil kislotaga a) sirka anhidrid; b) CH_3OH va H^+ ta'sir ettirilganda hosil bo'ladigan birikmalarni nomlang. Ular qayerlarda ishlatiladi?

18. Quyidagi reaksiyalar tenglamalarini to'liq yozing. Ularning oxirgi mahsulotlarini nomlang:



19. Ftal anhidrid va boshqa reagentlardan foydalanib a) *o*-benzoilbenzoy kislota; b) nordon etilftalat; d) ftalid; e) ftalimid; f) ftalil xloridni sintez qiling.

20. Ftalimid birlamchi aminlarni sintezlashda (Gabriel sintezi) ishlatiladi. Ftalimid va boshqa reagentlardan foydalanib *n*-butilaminni sintez qiling.

21. $C_8H_8O_3$ tarkibli optik faol modda ishqorning suvdagi eritmasida yaxshi eriydi, kislota va spirtlar bilan murakkab efirlarni hosil qiladi, $FeCl_3$ bilan rang bermaydi, kuchli oksidlovchilar bilan oksidlanganda benzoy kislota hosil qiladi. Optik faol moddaning tuzilishini aniqlang.

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	B	8	A	15	C
2	C	9	D	16	D
3	A	10	C	17	B
4	D	11	D	18	D
5	D	12	B	19	C
6	B	13	A	20	D
7	A	14	B	21	A

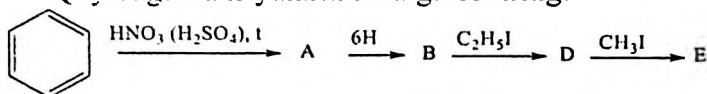
XXIII BOB. AROMATIK AMINLAR (ARILAMINLAR)

Aromatik aminlarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalariga oid masala va mashqlar

1. Anilinning mukammal tuzilishlarini yozing.
2. Anilin molekulasida aminoguruhning aromatik yadro bilan o'zaro ta'sirlashuvi qanday elektron juftlar vositasida amalga oshadi?
3. Quyidagi birikmalarning tuzilish formulalarini yozing:
 - a) N-metilnilin;
 - b) N,N-dimetilaminobenzol;
 - d) 1.4-diaminobenzol;
 - e) 4-aminotoluol;
 - f) difenilamin;
 - g) *o*-fenilendiamin;
 - h) γ -*m*-tolilpropilamin;
 - i) β -fenilizopropilamin;
 - j) 5-amino-2-fenilgeksan;
 - k) β -feniletilamin;
 - l) aniliniy xlorid;
 - m) benzidin (4.4¹-diaminodifenil);
 - n) *m*-toluidin.
4. Birlamchi, ikkilamchi va uchlamchi arilaminlarni ko'rsating.
5. C₇H₉N tarkibli izomer aromatik aminlarning tuzilish formulalarini yozing. Sof arilaminlar va alkilarilaminlarni ko'rsating.
6. *o*-nitrotoluolning ishqoriy muhitda qaytarilish reaksiyasi sxemasini yozing.
7. Nitrobenzolni vodorod sulfid bilan qaytarib. anilin olish (N.N.Zinin) reaksiyasi tenglamasini yozing. 2,46 g nitrobenzol reaksiyaga kirishganda nazariy jihatdan qancha anilin hosil bo'lishini hisoblang. (1, 320-b)
8. Quyidagi birikmalarni temir va konsentrlangan xlorid kislota bilan qaytarish reaksiyalari tenglamalarini yozing. Reaksiyalar mahsulotlarini nomlang:
 - a) nitrobenzol;
 - b) *o*-xlornitrobenzol;
 - d) *o*-nitrobenzoy kislota;
 - e) *o*-nitrotoluol;
 - f) *p*-nitroetilbenzol.
9. Yuqori temperatura va bosimda xlorbenzolga (xlor nishonlangan ¹⁴C bilan bog'langan) a) ammiak; b) NaNH₂ ta'sir ettirib. anilin olish reaksiyalari mexanizmlarini keltiring.
10. *o*-nitroxlorbenzoldan *o*-nitroanilin; b) anilindan dimetilnilin; d) difenilamin dan trifenilamin olish reaksiyalari tenglamalarini yozing. (1, 320-b)
11. 182,3 g *p*-toluidin olish uchun qancha *p*-nitrotoluol kerak? Reaksiyaning unumini 70% deb hisoblang. (1, 320-b)
12. Reaksiyaning unumi 80% bo'lganda, 200 g *m*-nitrotoluoldan qancha *m*-toluidin hosil bo'ladi?

13. Benzol va boshqa reagentlardan foydalanib, a) *o*-fenilendiamin; b) *m*-fenilendiamin; d) *p*-aminofenol; e) *p*-nitroanilin; f) *p*-xloranilin; g) N,N-dietilanilinni sintez qilish reaksiyalari sxemalarini keltiring.

14. Quyidagi reaksiyalarni amalga oshiring:



Bu reaksiyaning oxirgi mahsulotini nomlang

15. Quyidagi birikmalarning tuzilish formulalarini yozing:

a) α -naftildiazoniyl nitrat; b) azodikarboksilik kislota dietil efiri; d) diazometan; e) azobenzol; f) 4-nitrofenildazonium gidrosulfat.

16. *p*-nitroanilin va fenoldan olingan bo'yoqning strukturaviy formulasini yozing.

17. Quyidagi birikmalar uchun strukturaviy formulalarni yozing:

a) azobenzol; b) gidrazobenzol; d) diazoaminobenzol.

18. Quyidagi birikmalar uchun strukturaviy formulalarni yozing:

a) benzenediazoniyl bromidi; b) benzenediazoniyl vodorod sulfati; d) *p*-toluol diazoniyl xlorid.

19. *m*-Nitrotoluol Zinin usuli bilan qaytarildi. Olingan mahsulot sovuqda xlorid kislota ishtirokida natriy nitrit bilan ishlangan va β -naftolning sovigan ishqoriy eritmasiga qo'shilgan. Reaksiyalar tenglamalarini va hosil bo'lgan birikmaning tuzilishini yozing.

20. $\text{C}_8\text{H}_{11}\text{N}$ molekulyar formulaga ega A birikmasi nitrat kislota bilan o'zaro ta'sirlashib $\text{C}_8\text{H}_{10}\text{O}$ tarkibidagi spirtni hosil qiladi, oksidlanish natijasida ftal kislota aylanadi. A moddaning tuzilishini ko'rsating.

21. Azo birikmasini qalay (II) xlorid bilan davolashda 4-amino-3-bromo-toluen va 4-amino-2-metilfenol hosil bo'ladi. Azo birikmasi qanday tuzilgan?

22. Diazotizatsiya reaksiyasi yordamida benzoldan *p*-metoksianilin, *m*-nitrofenol va *m*-xlorobromobenzolni oling.

23. Benzoldiazoniyl xloriddan fenilgidrazin olish reaksiyasini yozing

24. Nima uchun *p*-anilin qizil rangini sintez qilishda ortiqcha kislota ishlatish kerak?

25. Reaktivlarni ko'rsating va *p*-tolildiazoniy xloridni quyidagi birikmalarga aylantirish uchun zarur bo'lgan shartlarga e'tibor bering.

a) toluol; b) *p*-kresol; d) *p*-florotoluol; e) *p*-metilanizol; f) 2,4-dihidroksi-4'-metilazobenzol.

26. Anilin natriy nitrit bilan o'zaro ta'sirlashganda hosil bo'ladigan reaksiya tenglamalarini yozing:

a) xlorid kislota etishmasligi bilan; b) ortiqcha xlorid kislotasi bilan?

27. $C_{12}H_9N_3O_6S$ azo bo'yoqining tuzilishini ko'rsating, u qaytarilganda sulfanil kislota va $C_6H_6N_2O_3$ moddasini hosil qiladi. Ikkinchisi diazotizatsiya va diazoniy tuzini etil spirti bilan kuchsiz ishqoriy muhitda qizdirgandan so'ng meta-nitrofenolga aylanadi. Reaksiya sxemalarini keltiring. Tegishli diazo va azo komponentlaridan azo bo'yoqni oling.

28. Zandmeyer reaksiyasining mexanizmini hamda mis(I) tuzlarining katalitik ta'sirini tushuntiring.

29. Nega yodobenzolni distillashdan oldin reaksiya aralashmasiga ishqor qo'shiladi?

30. *p*-toluidin va sulfanil kislota diazotizatsiyasi uchun reaksiya tenglamalarini yozing. Tegishli diazoniy tuzlarini β -naftol va N, N-dimetilanilin bilan azo biriktirish shartlarini ko'rsating.

31. *o*-toluidin diazotizatsiyasi va undan keyin hosil bo'lgan eritmani kaliy yodidning suvli eritmasi bilan ishlov berish jarayonida qanday birikma hosil bo'ladi?

32. Azo birikish reaksiyasi mexanizmini keltiring. Diazoniy kationining benzol halqasidagi o'rinbosarlar reaksiya tezligiga qanday ta'sir qiladi?

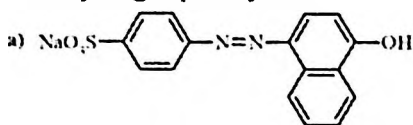
33. Nima uchun fenollar va aromatik aminlar azo komponenti sifatida ko'pincha ishlatiladi?

34. Fenollar va aminlar bilan azo birikishni amalga oshirishda pH qiymatining optimal ko'rsatkichlari qanday? Javobni asoslang.

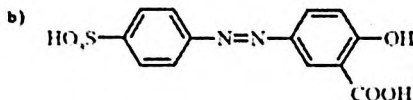
35. *o*-toluidindan *o*-tolildiazoniyni oling va u uchun kaliy yodidi, qizdirilganda metil spirt bilan reaksiyalarni, shuningdek fenol bilan azo-birikish reaksiyasini yozing. Oxirgi modda rangli bo'ladimi?

36. Boshlang'ich materiallar sifatida *p*-nitroanilin va rezorsinoldan foydalangan holda azo birikmasini tayyorlang. Olingan birikma bo'yoqmi? Javobingizni tushuntiring.

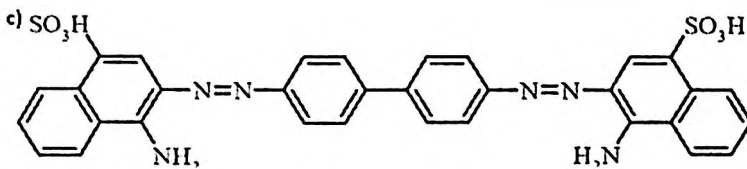
37. Quyidagi tuzilishdagi azo bo'yoqlarni olish uchun azo birikish reaksiyasiga qanday diazo va azo komponentlarini kiritish kerak:



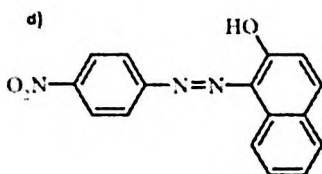
tropaeolin (III)



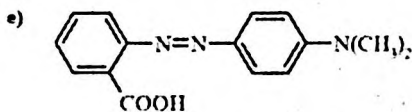
5-(4-sulfophenilazo)-salisil kislota



qizil kongo



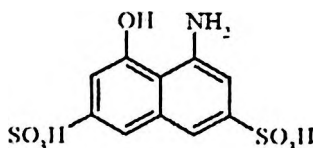
para-nitroanilin qizil



antranil qizil

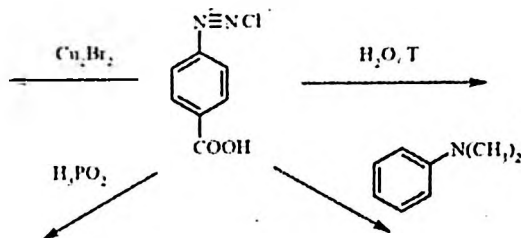
Reaksiya tenglamalarini yozing

38. H-kislota (1-amino-8-gidroksinaftalin3,6-disulfonik kislota) pH = 9 va pH = 5 da *p*-nitrofenildazonium xlorid bilan qanday reaksiyaga kirishadi?



H-kislota

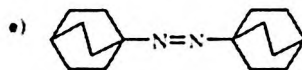
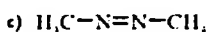
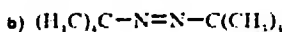
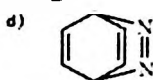
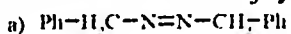
39. Quyidagi o'zgarishlarni yozing:



40. Agar molekulaning dipol momenti nolga teng ekanligi ma'lum bo'lsa, azobenzolning ancha barqaror izomerining fazoviy tuzilishi qanday?

41. Rezonansli gibridga eng katta hissa qo'shadigan diazometanning rezonansli tuzilmalarini yozing. Diazometan va sirka kislotasidan metilatsetatni qanday olish kerakligini ular yordamida tushuntiring.

42. Berilgan birikmalarni azot molekulasini bilan parchalanish qulayligini oshirish tartibida joylashtiring:



43. Elenium preparatining metabolitlaridan biri bu p-xloroanilindir. Kimyoviy-toksikologik analizda p-xloroanilin diazotizatsiya va keyinchalik a-naftol bilan azo biriktirish orqali aniqlanadi. Ushbu kimyoviy-toksikologik tahlil asosida yotgan reaksiyalarni yozing..

44. b-naftoloranjni oling va muhitning pH qiymatiga qarab uning indikator o'tishini tekshiring.

45. p-metilbenzoldiazoniy xlorid misolidan foydalanib, kislotali holatdan neytral va ishqoriy muhitga o'tish jarayonida ushbu tuz tarkibida qanday o'zgarishlar yuz berishini ko'rsating.

46. Sulfanil kislotani diazotizatsiya qilish uchun u avval ishqorda eritiladi, so'ngra natriy nitrit eritmasi bilan aralashtiriladi va hosil bo'lgan eritma muz bilan suyultirilgan xlorid kislotaga quyiladi. Reaktiv aralashmasiga reaktivlarni kiritishning bunday ketma-ketligini nima uchun bajarish kerak? Davom etayotgan reaksiyalar sxemalarini yozing.

47. Nitroanilin qizili deganda suvda erimaydigan "muz" bo'yoqlari nazarda tutiladi, shuning uchun bo'yashdan oldin mato β -naftol eritmasi bilan singdiriladi (qaysi muhitda kislotali yoki ishqoriy?), So'ngra diazotlangan p-nitroanilin eritmasiga 0°C gacha sovutiladi. P-nitroanilin qizil rangini olish uchun reaksiya sxemalarini yozing va xromofor va oksixromik guruhlarni ko'rsating.

48. Boshlang'ich birikmalar sifatida o-aminobenzoy kislotasi va N, N-dimetilaminobenzol yordamida metil qizilni tayyorlash reaksiya sxemalarini yozing. Kislotali muhitda metil qizil tarkibida qanday o'zgarishlar yuz beradi?

Aromatik aminlarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. C_7H_9N tarkibli izomer aromatik amin (sof arilamin va alkilarilamin) larning jami soni nechta?

- A) 4 ta B) 5 ta C) 6 ta D) 7 ta

6. 319- va 322-b.

2. $C_8H_{11}N$ tarkibli birlamchi aromatik aminlarning nechta izomeri bor?

- A) 8 ta B) 9 ta C) 10 ta D) 11 ta

3. $C_8H_{11}N$ tarkibli ikkilamchi va uchlamchi alkilaromatik (alkilaril) aminlarning jami soni nechta?

- A) 6 ta B) 5 ta C) 4 ta D) 3 ta

4. Anilin birinchi marta qachon, kim tomonidan, qanday usul bilan olingan?

A) 1842-yilda N.N. Zinin nitrobenzolni $(NH_4)_2S$ ta'sirida qaytarib oldi;

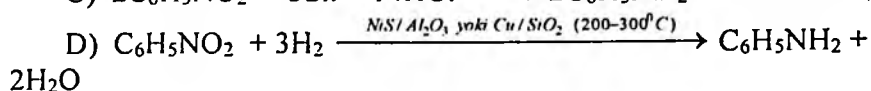
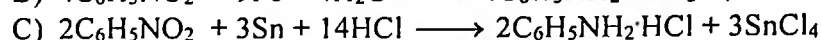
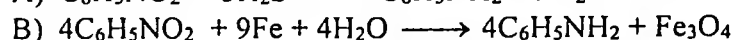
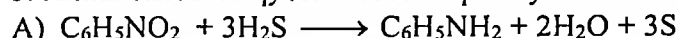
B) 1841-yilda Yu.F. Fritsshe indigoni KOH eritmasi bilan qizdirib oldi;

C) 1834-yilda F. Runge toshko' mir smolasidan ajratdi;

D) 1826-yilda O. Unferdormen indigoni ohak bilan haydab oldi.

3, c. 414

5. Anilin sanoat miqyosida asosan qanday usul bilan olinadi?



3, c. 414

6. Aminlarning qaysi biri nisbatan eng kuchsiz asos?

- A) metilamin B) trifenilamin C) anilin D) difenilamin

3, c. 409; 26, 257-b.

7. Aminlarning qaysi biri nisbatan eng kuchli asos?

- A) anilin B) N,N-dimetilanilin
C) *p*-toluidin D) 2,4-dinitroanilin

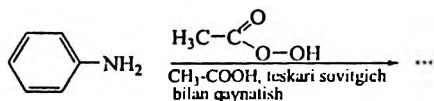
3, c. 409; 26, 257-258-b.

8. Anilindagi $-NH_2$ guruh qanday effekt(lar)ni namoyon qiladi?

- A) faqat +I effekt B) faqat -I effekt
C) faqat -M effekt D) +M va -I effekt

26, 256-b.

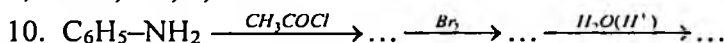
9.



Reaksiya mahsulotini nomlang.

- A) fenilgidrosilamin B) nitrozobenzol
C) nitrobenzol D) gidrazobenzol

6, 325-b; 10, 2, c. 284



Reaksiyalarning oxirgi mahsuloti qanday organik modda?

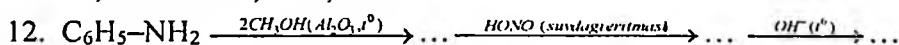
- A) *p*-bromanilin B) *o*-bromanilin
C) *m*-bromanilin D) *o*-bromatsetanilid

6, 324-b.

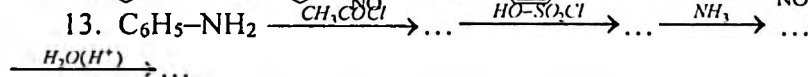
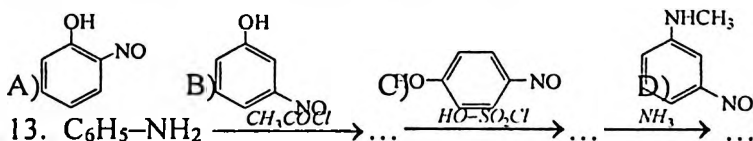
11. Birlamchi aromatik aminlar bilan aromatik aldegidlar o`zaro reaksiyaga kirishganda qanday organik moddalar hosil bo`ladi?

- A) azobirikmalar B) diazobirikmalar
C) azoksibirikmalar D) azometinlar (Shiff asoslari)

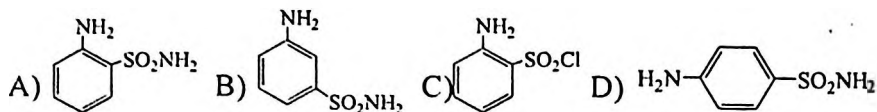
18, 473-474-b.; 26, 260-b.



Reaksiyalar oxirgi mahsuloti tuzilishini aniqlang.



Reaksiyalar oxirgi mahsuloti tuzilishini aniqlang.



19, II. c. 94

14. Aminlardan qaysi biri atsetillash reaksiyasiga nisbatan eng oson kirishadi?

- A) anilin
 B) 2,4-dinitroanilin
 C) *p*-nitroanilin
 D) *p*-aminofenol

22, c. 403

15. Birlamchi aromatik aminlarni xloroform va ishqorning spirtidagi eritmasi bilan qizdirilganda hosil bo`ladigan badbo`y organik moddalarning nomini ayting.

- A) aromatik nitrillar
 B) aromatik izonitrillar
 C) aromatik azobirikmalar
 D) aromatik diazobirikmalar

6, 261-b.



Reaksiyalar oxirgi mahsulot(lar)ini nomlang.

- A) *o*-bromanilin
 B) *m*-bromanilin
 C) *p*-bromanilin
 D) *o*- va *m*-bromanilinlar

1, 4, 3, c. 316-317; 26, 263-b.

17. Anilin IQ-spektrida NH-guruhining valent tebranishlari qaysi sohada namoyon bo`ladi?

- A) 3200 sm^{-1} B) 3300 sm^{-1} C) 3400 sm^{-1} D) 3500 sm^{-1}

8, c. 431

18. Aromatik aminlar UB-spektrlarida ikkita λ_{maks} bor. Ular qaysi sohalarda kuzatiladi?

- A) 160 va 200 nm
 B) 165 va 205 nm
 C) 234 va 286 nm
 D) 170 va 216 nm

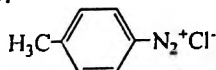
8, c. 431

19. Anilin IQ-spektrida NH - guruhining deformatsion tebranishlari qaysi sohada kuzatiladi?

- A) $1410\text{-}1360\text{ sm}^{-1}$ B) $1310\text{-}1270\text{ sm}^{-1}$
 C) $1740\text{-}1700\text{ sm}^{-1}$ D) $1640\text{-}1560\text{ sm}^{-1}$

8, c. 431

20.



tuzilishli birikmani nomlang.

- A) *p*-toluoldiazotat xloridi
- B) *p*-toluoldiazoniy xloridi
- C) *o*-toluoldiazoniy xloridi
- D) *m*-toluoldiazoniy xloridi

6, 325-b; 26, 271-272-b.

21. Birlamchi arilaminlarga ma'dan kislota ishtirokida natriy nitritini ta'sir ettirib, arildiazoniy tuzlarini olish reaksiyasini kim ochgan?

- A) A. Ganch
 - B) C. Giller
 - C) P. Gris
 - D) Yu. Grefe
- 1, 4.3, c. 350; 3, c. 421; 26, 274-b.

22. Diazotirlash reaksiyasida 1 mol arilaminga necha mol ma'dan kislota olinadi?

- A) 0,5 mol
 - B) 1 mol
 - C) 1,5-2 mol
 - D) 2,5-3 mol
- 26, 276-277-b.

23. Azobirikish reaksiyalari diazoniy tuzlari bilan halqasida qanday guruhlarni tutgan aromatik birikmalar orasida oson boradi?

- A) $-\text{CHO}$ va $>\text{S}=\text{O}$
- B) $-\text{NO}_2$ va $-\text{N}=\text{O}$
- C) $-\text{O}^-$, $-\text{OH}$, $-\text{OR}$, $-\text{NH}_2$, $-\text{NHR}$, $-\text{NR}_2$
- D) $-\text{SO}_2\text{OH}$, $-\text{COOH}$

26, 282-b.

24. Azobirikish reaksiyalariga azokomponentlar (azotashkil etuvchilar) sifatida asosan qanday birikmalar kiritiladi?

- A) aldegid, keton va karbon kislotalar
 - B) fenollar va arilaminlar
 - C) nitrobirikmalar
 - D) sulfokislotalar
- 26, 284-b.

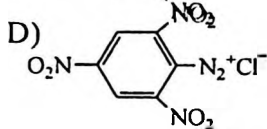
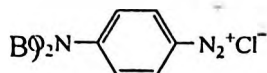
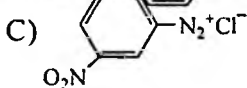
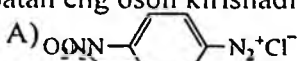
25. Azobirikish o'z mexanizmiga ko'ra qanday reaksiyalarga kiritiladi?

- A) aromatik yadroda boradigan S_E
- B) aromatik yadroda boradigan S_N
- C) aromatik yadroda boradigan S_R
- D) aromatik yadroda boradigan A_d

26. Fenol, gidroxinon, rezorsin va floriglyutsinlarning qaysi biri azobirikish reaksiyasiga nisbatan oson kirishadi?

- A) gidroxinon
 - B) fenol
 - C) floriglyutsin
 - D) rezorsin
- 26, 284-b.

27. Quyidagi birikmalardan qaysi biri azobirikish reaksiyasiga nisbatan eng oson kirishadi?



26. 284-b.

28. Azobirikish reaksiyalari arilaminlar bilan qanday muhitda boradi?

A) kuchli ishqoriy

B) neytral

C) kuchsiz ishqoriy

D) kuchsiz kislotali

8, s 438; 10, 2, c. 295-296; 11, c. 528-529; 26, 285-b.

29. Azobirikish reaksiyalari fenollar bilan qanday muhitda boradi?

A) neytral

B) kuchli kislotali

C) kuchsiz ishqoriy

D) kuchsiz kislotali

8, s 438; 10, 2, c. 295-296; 11, c. 528-529; 26, 284-b.

30. Arendiazoniy tuzlari qanday moddalar?

A) suvda erimaydigan, sariq rangli, termik barqaror suyuqliklar.

B) suvda eriydigan, beqaror rangsiz kristall moddalar bo'lib,

ba'zilar ishqalaganda va qizdirilganda portlaydi.

C) suvda erimaydigan, termik barqaror, rangsiz kristall moddalar

D) suvda erimaydigan, termik barqaror, sariq rangli kristall

moddalar

26. 277-b.

31. Arendiazoniy tuzlaridagi azot atomlari qanday gibridlangan holatida?

A) sp^3 -

B) sp^2 -

C) sp -

D) sp^3 - va sp^2 -

26, 273-b.

32. Quruq arendiazoniytetraftorboratlarni termik parchalaganda aromatik halqadagi diazoguruh ftorga almashinadi. Bu kimning reaksiyasi?

A) X. Shiff

B) K. Shmidt

C) R. Shmit

D) G. Shiman

26, 279-b.

33. Diazoguruhni xlor, brom va sian-guruhga almashinishida mis(I)tuzlari samarali katalizator hisoblanadi. Katalizatorsiz esa bu reaksiyalarning unumi past (20 % dan oshmaydi). Mis(I)tuzlari

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	D	14	D	27	C
2	B	15	D	28	A
3	D	16	B	29	D
4	C	17	C	30	D
5	D	18	B	31	C
6	C	19	D	32	B
7	A	20	D	33	B
8	D	21	D	34	A
9	B	22	D	35	D
10	B	23	A	36	D
11	D	24	D	37	D
12	C	25	C	38	C
13	A	26	B	39	C

XXIV BOB. GETEROTSIKLIK BIRIKMALAR

Geterosiklik birikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari oid masala va mashqlar

1. Pirrol, furan, piridin, piperidin, imidazol, purin, adenin, guanin, sitozin, uratsil, timinning tuzilish formulalarini yozing.

2. Quyidagi birikmalarning tuzilish formulalarini yozing:

a) 2,6 – dimetilpiridin ; b) 3 – brom-1-metilpiperidin ;

d) N, α , α^1 – trimetil piperidin; e) 6 – metil-8-aminoxinolin

f) 5,8-dioksa-5,8-digidroxinolin ; g) N-metilpiridiniy yodid .

3. Monometilxinolinlarning barcha izomerlari tuzilish formulalarini yozing va ularni nomlang.

4. Piridinning C_7H_9N tarkibli gomologlarining tuzilish formulalarini yozib, ularni nomlang.

5. Bitta pirimidin halqasi, bitta metil va bitta fenil radikali saqlagan barcha moddalarning formulalarini yozing.

6. Tarkibida birta pirrol halqasi va uchta metil radikali saqlagan barcha izomer birikmalarning formulalarini yozing.

7. Purin sistemasi geterotsikllari va butil radikali saqlagan barcha izomer birikmalarning formulalarini yozing.

8. Istalgan etilpirimidinning formulasini yozib, ikkilamchi aminga taaluqli izomerining formulasini ko'rsating.

9. a) 2-propilgeksagidropiridin, b) 2-metil-4,5-digidroksimetil-3-gidroksipiridin tuzilish formulalarini yozing.

10. Tarkibida timin saqlagan dezoksiribonukleotidning formulasini yozing.

11. «A» modda suyuqlik bo'lib, suv bilan cheksiz aralasha oladi va u toshko'mir smolasi tarkibida bo'ladi. «A» modda kuchsiz asos xossalari namoyon qilib, gidrogenlanganda «B» modda – asos hosil bo'lib, u xlorid kislotasi bilan «C» tuzni hosil qiladi. «A», «B», «C» moddalarni toping. Reaksiyalarning tenglamalarini yozing.

12. Halqasida o'rinbosarlari bo'lmagan azot saqlagan geterotsiklik birikma yondirilganda 0,75 mol` karbonat angidrid, 0,375 mol` suv va 0,075 mol` azot hosil bo'ldi. Boshlanich moddaning tuzilishini aniqlang.

13. 0,950 g pirrol gomologining namunasi 4,20 l hajmli po'lat idishga solinib, unga 2,24 l (n.sh.) kislorod aralashtirildi. Modda to'liq

yonganidan keyin idishdagi bosim 303 °C da 145, 3 kPa ni tashkil etdi. Tekshirilayotgan moddaning tuzilishini (4 ta izomerining formulasini) yozing.

14. Tabiiy biologik aktiB modda A ning namunasi mo'l ishqorning suvli eritmasi bilan ta'sir ettirilganda zichligi 0,76 g/l (n.sh.) bo'lgan gaz ajralib, X tuzi saqlagan eritma qoladi. Eritma to'liq bug'latilib, qizdirilganda qolgan qattiq qoldiq 75,94% uglerod, 6,34% vodorod, 17,72% Y (massa bo'yicha) elementi saqlagan uchuvchan V suyuqlik hosil qiladi. X tuzning eritmasiga qariyb neytrallanguncha kislota qo'shib, ionalmashinish xromatografiyasi yoki inoforez yordamida 58,54% uglerod va 4,06% vodorod saqlagan (massa bo'yicha) Z kislotani ajratib olish mumkin.

a) Y elementni aniqlab, V va Z birikmalarining formulalarini toping.

b) A, V, Z moddalarning tuzilish formulalarini yozing.

d) O'tkazilgan reaksiyalarning tenglamalarini yozing.

e) A, V, Z moddalarning trivial nomlarini ayting.

f) A birikma qanday biologik jarayonlarda ishtirok etadi?

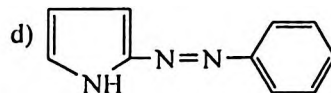
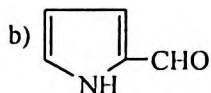
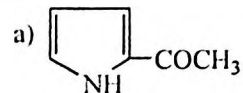
15. Tarkibida 8,70% azot saqlagan 4,83 g dezoksiribonukleotid gidrolizlanganda hosil bo'lgan mahsulotlar mo'l ohakli suv bilan ishlov berilganda 2,325 g cho'kma tushdi. Dezoksiribonukleotidning tuzilish formulasini aniqlab, tegishli reaksiyalarning tenglamalarini yozing.

16. Boshqa organik reaktivlardan foydalanmasdan qahrabo kislotasidan pirrolni sintez qilish sxemasini taklif eting.

17. C_6H_6OS tarkibidagi birikma quyidagi xususiyatlarga ega: a) kumush oksidning ammiak eritmasi bilan reaksiyaga kirishmaydi; b) oksim beradi; v) natriy gipoxlorit ta'sirida α -tiofenikarboksilik kislota hosil qiladi. Berilgan moddaning tuzilishini aniqlang.

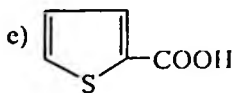
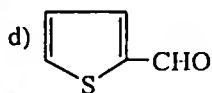
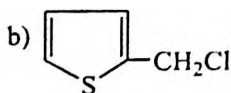
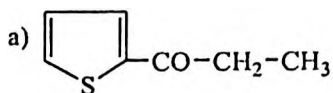
18. Molekulyar formulasi $C_6H_5NO_2$ bo'lgan uch aromatik birikmaning tuzilish formulalarini yozing.

19. Pirroldan qanday reaktivlar ta'irida quyidagi moddalarni hosil qiladi:



Barcha reaksiya tenglamalarini yozing.

20. Tiofendan quyidagi moddalarni olinishini ko'rsating



21. Istalgan reagentlardan foydalanib, quyidagi sintezlarni amalga oshiring :

a) β - pikolin \longrightarrow vitamin PP (nikotinamid)

b) γ - pikolin \longrightarrow izonikotin kislota gidrazidi

22. Piridin molekulasining elektron tuzilishini tushuntiring.

23. Adenin va timin orasida vodorod bog'lanishlar hosil bo'lishini ko'rsatadigan sxemani ko'rsating.

24. RNK ning DNK dan asosiy farqlarini ko'rsating.

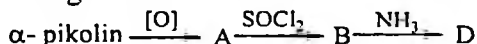
25. 115 g pirrolning benzoldagi eritmasi kaliy bilan ta'sirlashganda 1,12 l (n.sh.) gaz ajraldi. Moddalarning dastlabki eritmadagi konsentratsiyalarini toping.

26. Nega piridin asos xossalariga egayu, pirrol ega emas ?

27. Ammiak bilan piridinning xossalaridagi o'xshashlik nimada?

28. a) piridin bilan benzolning b) piridin bilan pirrolning o'xshashlik va farqlari nimada?

29. Quyidagi reaksiyalar tenglamalarini yozing. Oraliq va oxirgi mahsulotlarni nomlang:



30. Nima uchun pirrolning qaytarilish mahsuloti – pirroliddin kuchli asos xossalariga ega?

31. Nega piridin halqasi kislotalar ta'siriga chidamliyu, pirrol halqasi chidamli emas ?

32. DNK zanjirlaridan birida adeninning molyar ulushi 30%, guaninning molyar ulushi 24% ga teng. Komplementar zanjirdagi asoslarning molyar ulushlarini toping. Sintetik yuqori molekulyar birikmalar (polimerlar)

33. «A» uglevodorod havodan og'ir bo'lib, degidrogenlanganda havodan yengil birikma «B» ni hosil qiladi. «B» birikma ma'lum

sharoitda sifat va miqdoriy tarkibi «B» niki bilan bir xil bo'lgan «C» birikmaga aylanib, vodorod xlorid bilan reaksiyaga kirishmasligi bilan farq qiladi. «A», «V», «C» moddalarning formulalarini toping. Tegishli reaksiyalarning tenglamalarini yozing.

34. Zichligi havonikidan kichik bo'lgan «A» uglevodorod simob(II)-xloridi ishtirokida vodorod xlorid bilan reaksiyaga kirishib, «B» moddaga aylanadi, «B» birikma ma'lum sharoitda sifat va miqdoriy tarkibi «B» niki bilan bir xil, ammo nisbiy molekulyar massasi katta bo'lgan «C» birikmaga aylanadi. «A», «V», «C» moddalarning formulalarini toping. Tegishli reaksiyalarning tenglamalarini yozing.

35. 15 g 1:2:3 molyar nisbatda aralashtirilgan glitserin, fenol va pirrol alashmasiga natriy metalli ta'sir ettirilganda ajralgan vodorod cho'g'langan mis(II)-oksidi joylangan nay orqali o'tkazilganda nayning massasi qanday o'zgaradi?

Geterosiklik birikmalarning nomenklaturasi, izomeriyasi, olinishi, kimyoviy xossalari, spektroskopiyasiga oid testlar va ularni yechish uchun adabiyotlarga havolalar

1. Barcha izomer dimetilpirrollarning soni nechta.

A) 8 ta B) 6 ta C) 5 ta D) 4 ta

6. 349- va 352-b.

2. Furan + NH₃ $\xrightarrow{Al_2O_3, 400^\circ C}$...

Ushbu reaksiya kimning nomi bilan yuritiladi?

A) N.D. Zelinskiy B) A.N. Nesmeyanov

C) N.N. Zinin D) Yu.K. Yurev

26. 309-b.

3. Qahrabo kislota $\xrightarrow{2NH_3}$ A $\xrightarrow{\Delta}$ B $\xrightarrow{\Delta}$ C $\xrightarrow{2Zn, \Delta}$ D

D mahsulotni nomlang:

A) pirrol

B) pirrolidin

C) qahrabo kislota amidi

D) qahrabo kislota imidi

26. 310-b.

4. Atsetilen va ammiakni qizdirilgan Fe₂O₃ ustidan o'tkazilganda qaysi organik birikma hosil bo'ladi?

A) vinilamin

B) 1-aminobuten-2

C) diaminoetin

D) pirrol

26, 310-b.

5. Atsetonilatseton $\xrightarrow{NH_3, \Delta}$...

Qaysi geterotsiklik birikma hosil bo'ladi?

- A) 2,3-dimetilpirrol B) 2,3-dimetilpirrolidin
C) 2,4-dimetilpirrol D) 2,5-dimetilpirrol

26, 310-b.

6. Anilin bug'i bilan atsetilen aralashmasini 600-700°C da qizdirilgan naydan o'tkazilganda indol hosil bo'ladi. Ushbu reaksiyani kim ochgan?

- A) B. Kazanskiy B) N.D. Zelinskiy
C) A.E. Chichibabin D) Yu.S. Shabarov

8, c. 482

7. Pentozan $\xrightarrow{H_2O, H^+, \Delta}$ A $\xrightarrow{HClO_2/H_2O, \Delta}$ B

B qanday geterotsiklik birikma?

- A) piroshilliq kislota B) furfurol
C) furan D) tetragidrofuran

26, 304-b.

8. Furan, tiofen va pirrolning qaysi birlarida geteroatom p- elektronlarining halqa π -elektronlari bilan o'zaro mezomer ta'sirlashuvi eng kuchli?

- A) furanda B) pirrolda
C) furan va pirrolda D) tiofenda

26, 299-303-b.

9. Furan, tiofen va pirrolning qaysi birlari o'z xossalari bilan benzolga eng yaqin?

- A) furan B) pirrol C) furan va pirrol D) tiofen

26, 299-303-b.

10. Furan, tiofen va pirrolning qaysi bir(lar)ida geteroatom p- elektronlarining halqa π -elektronlari bilan o'zaro mezomer ta'sirlashuvi eng kuchsiz?

- A) tiofenda B) pirrolda C) tiofenda va pirrolda D) furanda

26, 299-303-b.

11. Furan, tiofen va pirrolning qaysi bir(lar)i ba'zi reaksiyalarda aromatik birikmalardan ko'ra alifatik diyen xossalari ko'proq namoyon qiladi?

- A) tiofen B) pirrol C) furan D) tiofen va pirrol

26, 302-b.

12. Benzol, furan, tiofen va pirroldan qaysi birining dipol momenti nisbatan katta?

- A) tiofenning B) benzolning C) pirrolning D) furanning
26. 302-b.

13. Benzol, furan, tiofen va pirrol halqalarning qaysi birida π -elektron zichligi nisbatan katta?

- A) furanda B) benzolda C) tiofenda D) pirrolda

26. 299-303-b.

14. Furan va pirrolni nitrolashda qaysi reagent ishlatiladi?

- A) konsentrlangan nitrat va sulfat kislotalar aralashmasi (nitrolovchi aralashma) B) $\text{CH}_3\text{COONO}_2$
C) kons. HNO_3 D) suyultirilgan HNO_3

26. 305- va 312-313-b.

15. Furan va pirrolni sulfolashda qaysi reagent ishlatiladi?

- A) tutovchi sulfat kislota
B) simob sulfat ishtirokida tutovchi sulfat kislota
C) piridinsulfotriksid yoki dioksansulfotriksid
D) konsentrlangan sulfat kislota

26. 305- va 312-313-b.

16. Benzol, furan, tiofen va pirrolning qaysi biri elektrofil o`rin olish reaksiyalariga eng oson kirishadi?

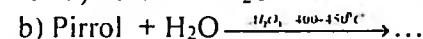
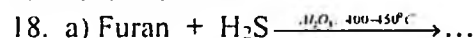
- A) benzol B) tiofen C) furan D) pirrol

8. c. 469

17. Elektrofil reagentlar birinchi navbatda indol molekulasining qaysi holatiga hujum qiladi?

- A) 2-holatiga B) 3-holatiga
C) 4-holatiga D) 7-holatiga

2. τ .2. c. 446-447

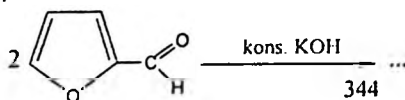


a va b reaksiyalar qaysi olim(lar)ning nomi bilan yuritiladi?

- A) Yu.S. Shabarov B) Yu.K. Yurev
C) E.E. Nifantev D) V.M. Traven

26. 306-b.

19.



Reaksiya mahsulot(lar)ni qaysi organik birikma(lar)?

- A) faqat pirroshilliq kislotaning kaliyli tuzi
- B) faqat furfuril spirt
- C) pirroshilliq kislotaning kaliyli tuzi va furfuril spirt
- D) furfuril spirtning kaliyli alkogolyati

8, c. 475



... Reaksiyalar oxirgi mahsuloti qanday nomlanadi.

- A) furan
- B) digidrofuran
- C) furfuril spirt
- D) tetragidrofuran

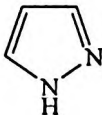
6, 353-b.

21. C_6H_6OS tarkibli modda oksim hosil qiladi, kumush oksidning ammiakdagi eritmasi bilan reaksiyaga kirishmaydi, natriy gipoxlorid ta'sirida esa 2-tiofenkarbon kislotaga aylanadi. C_6H_6OS moddaning tuzilishini aniqlang va uni nomlang.

- A) 1-atsetiltiofen
- B) 2-atsetiltiofen
- C) 3-atsetiltiofen
- D) 2-atsetiltiofan

6, 351- va 353-b.

22.

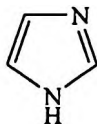


tuzilishli geterotsiklni nomlang.

- A) imidazol
- B) pirazol
- C) pirazin
- D) piridazin

26, 317-b.

23.

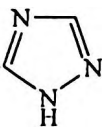


tuzilishli geterotsikl qanday nomlanadi?

- A) piridazin
- B) imidazol
- C) pirazin
- D) pirazol

26, 317-b.

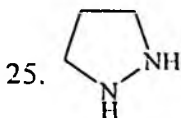
24.



tuzilishli geterotsikl qanday nomlanadi?

- A) 1,2,4-pirazol
 C) 1,2,4-triazol
 26, 317-b.

- B) 1,3,4-triazol
 D) 1,3,5-triazol



tuzilishli birikmani nomlang.

- A) pirazolidin
 C) pirazolinin
 26, 320-b.

- B) digidropirazol
 D) digidropirazolin

26. Glioksal, formaldegid va ammiakdan qaysi geterotsikl sintez qilinadi?

- A) pirazol
 C) 2-aminoimidazol
 12, c. 148

- B) imidazol
 D) 2-aminopirazol

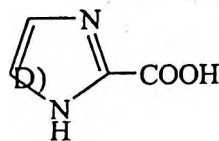
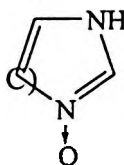
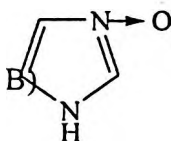
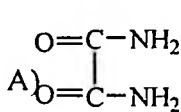
6. Pirazol qanday xossalarni namoyon qiladi?

- A) kuchli asos
 C) kuchli kislota
 26, 319-b.

- B) kuchli kislota va kuchsiz asos
 D) kuchsiz kislota va kuchsiz asos

27. $\text{Imidazol} + \text{H}_2\text{O}_2 \rightarrow \dots$

Reaksiya mahsulotining tuzilishini aniqlang.



12, c. 156

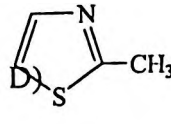
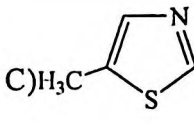
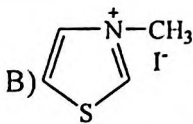
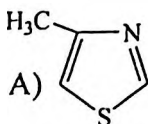
28. Tiazol qanday xossalarni namoyon qiladi?

- A) kuchli kislota
 C) kuchsiz asos
 12, c. 193

- B) kuchli asos
 D) kuchsiz kislota

29. Tiazol $\xrightarrow{\text{CH}_3\text{I}}$...

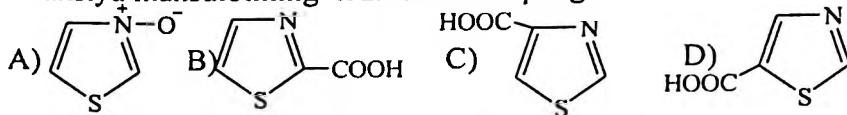
Reaksiya mahsulotining tuzilishini aniqlang.



26, 325-b.

30. Tiazol \xrightarrow{RCOOH} ...

Reaksiya mahsulotining tuzilishini aniqlang.



26, 325-326-b.

31. Tiazol elektrofil almashinish reaksiyalariga qiyin kirishish, shuningdek nukleofil reagentlar bilan reaksiyaga kirishishi jihatidan qaysi geterotsiklga o`xshaydi?

- A) pirrolga B) tiofenga C) oksazolga D) pirdinga

26, 325-b.

32.

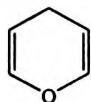


tuzilishli birikmani nomlang.

- A) α -digidropiran B) β -piran
C) β -digidropiran D) α -piran

6, 354-b; 11, c. 578; 12, c.292

33.



tuzilishli birikma qanday nomlanadi?

- A) α -piran B) β -piran C) γ -digidropiran D) γ -piran

6, 354-b.; 12, c. 292

14. Barcha izomer dibrompiridinlarning soni nechta?

- A) 5 ta B) 6 ta C) 4 ta D) 7 ta

6, 355- va 357-b.

34. Pikolin (monometilpiridin)larning soni nechta?

- A) 6 ta B) 3 ta C) 5 ta D) 4 ta

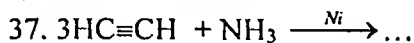
6, 355- va 357-b.

35. Monometilpiperidinlarning nechta izomeri bor?

- A) 4 ta B) 5 ta C) 6 ta D) 7 ta

6, 355- va 357-b.

36. Monometilxinolinlarning nechta izomeri bor?
 A) 7 ta B) 6 ta C) 5 ta D) 4 ta
 6, 355- va 357-b.



Qaysi geterotsikl hosil bo'ladi?

- A) digidropiridin B) tetragidropiridin
 C) piperidin D) piridin

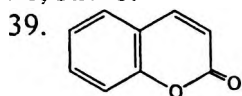
26, 329-b.



Qaysi geterotsiklik birikma hosil bo'ladi?

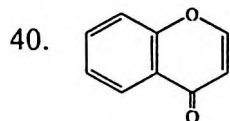
- A) tetragidropiridin B) digidropiridin
 C) piridin D) pirrolidin

26, 329-b.



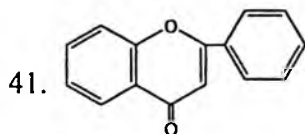
tuzilishli birikmani nomlang.

- A) flavon B) xromon
 C) izoflavon D) kumarin



tuzilishli birikmani nomlang.

- A) xromon B) kumarin
 C) flavon D) izoflavon



tuzilishli birikmani nomlang

- A) xromon B) flavon
 C) kumarin D) izoflavon

42. Piridin molekulasining qaysi holatlarida π -elektronlar zichligi katta?

- A) α, α' -holatlarida B) β, β' -holatlarida
 C) γ -holatida D) azot atomida

26, 230-b.

43. Piridinning qaysi holat(lar)i nukleofil o`rin olish reaksiyalariga kirishish qobiliyatiga ega?

- A) β -holati
B) β' -holati
C) faqat α - va α' -holatlari
D) α , α' - va γ -holatlari

26, 331-b.

44. Furan, tiofen, benzol va piridinning qaysi biri elektrofil o`rin olish reaksiyalariga eng qiyin kirishadi?

- A) benzol
B) piridin
C) tiofen
D) furan

26, 330-331-b.

45. Nukleofil o`rin olish reaksiyalarida xinolin molekulasining qaysi holati eng faol?

- A) α -holati
B) β -holati
C) γ -holati
D) o-holati

26, 337-b.

46. Piridin $AlCl_3$ katalizatorligida atsetil xloridi bilan Fridel-Krafts bo`yicha atsillash reaksiyasiga kirishadimi? Kirishsa qanday mahsulot hosil bo`ladi?

- A) 2-atsetilpiridin
B) reaksiyaga kirishmaydi
C) 3-atsetilpiridin
D) 4-atsetilpiridin

26, 333-b.

47. Piridin kerosinda natriy amid bilan qizdirilganda qaysi geterotsiklik birikma hosil bo`ladi?

- A) 3-aminopiridin va 4-aminopiridin aralashmasi
B) 4-aminopiridin
C) 2-aminopiridin
D) 3-aminopiridin

8, c. 489; 12, c. 246

48. Piridinning spirtdagi eritmasiga natriy ta`sir ettirganda hosil bo`ladigan geterotsikl(lar)ni nomlang:

- A) piperidin
B) digidropiridin
C) tetragidropiridin
D) 2-metilpirrolidin

26, 334-335-b.



C mahsulotning tuzilishini aniqlang va uni nomlang:

- A) α -piridinkarbon kislota amidi
B) β -piridinkarbon kislota amidi

C) γ -piridinkarbon kislota amidi

D) α -piridinkarbon kislota amidi va γ -piridinkarbon kislota amidi

6, 359-b.

50. Xinolinni kaliy permanganat bilan oksidlaganda hosil bo'ladigan geterotsiklik birikmani nomlang:

A) ftal kislota

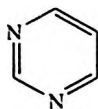
B) izoftal kislota

C) α , β -piridindikarbon kislota

D) tereftal kislota

26, 336-337-b.

51.



tuzilishli birikma qanday nomlanadi?

A) piridazin;

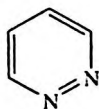
B) pirazin;

C) amidin;

D) pirimidin.

26, 340-b.

52.



tuzilishli birikma qanday nomlanadi?

A) amidin;

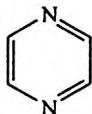
B) pirimidin;

C) pirazin;

D) piridazin.

26, 340-b.

53.



tuzilishli birikma qanday nomlanadi?

A) piridazin;

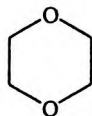
B) amidin;

C) pirazin;

D) pirimidin.

26, 340-b.

54.

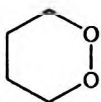


tuzilishli birikma qanday nomlanadi?

A) 1,2-dioksan; B) 1,3-dioksan; C) 1,4-dioksan; D) 1,4-dioksen.

12, c. 358

55.

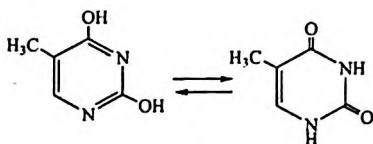


tuzilishli birikma qanday nomlanadi?

A) 1,3-dioksen; B) 1,2-dioksan; C) 1,2-dioksen; D) 1,4-dioksen.

12, c. 358

56.

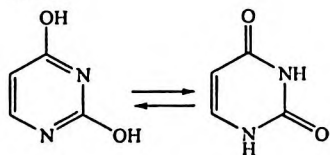


tuzilishli tautomer birikma qanday nomlanadi?

A) uratsil; B) timin; C) sitozin; D) barbitur kislota.

26, 342-b.

57.

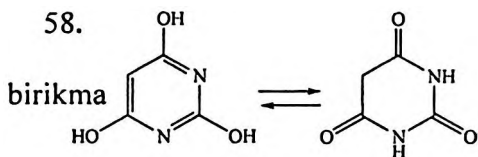


tuzilishli tautomer birikma qanday nomlanadi?

A) uratsil; B) timin; C) sitozin; D) barbitur kislota.

26, 340-b.

58.

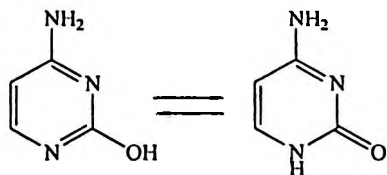


tuzilishli tautomer qanday nomlanadi?

A) uratsil; B) timin; C) sitozin; D) barbitur kislota.

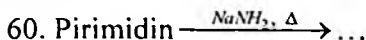
26, 340-b.

59.



tuzilishli tautomer birikma qanday nomlanadi?

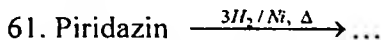
- A) barbitur kislota; B) timin; C) uratsil; D) sitozin;
26, 342-b.



Ushbu reaksiya kimning nomi bilan yuritiladi?

- A) Nifantev; B) Chichibabin; C) Sukervanik; D) Konovalov.

3, c. 707



Qanday organik mahsulot(lar) hosil bo`ladi?

- A) geksagidropiridazin; B) tetrametilendiamin;
C) butan va gidrazin; D) 2 mol etilamin.

3, c. 707

62. Etilenglikol 4% li H_2SO_4 yoki suvsiz $FeSO_4$ bilan qizdirilganda hosil bo`ladigan geterotsiklik birikmani nomlang.

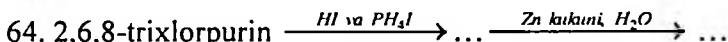
- A) 1,4-dioksan; B) 1,4-dioksen; C) 1,3-dioksan; D) 1,3-dioksen.

12, c. 359

63. Purinda qaysi geterotsikllar o`zaro kondensirlangan?

- A) pirazin va pirazol; B) piridazin va pirazol;
C) pirimidin va imidazol; D) piridin va pirazin.

12, c. 413

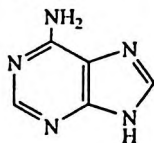


Reaksiyalarning oxirgi mahsuloti qaysi geterotsiklik birikma?

- A) pteridin; B) purin; C) siydik kislota; D) ksantin.

12, c. 414

65.

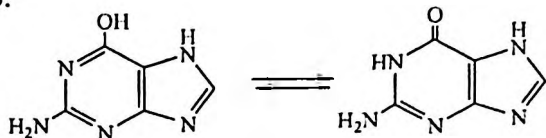


tuzilishli birikma qanday nomlanadi?

- A) adenin; B) guanin; C) kofein; D) teobromin.

12, c. 429

66.



tuzilishli

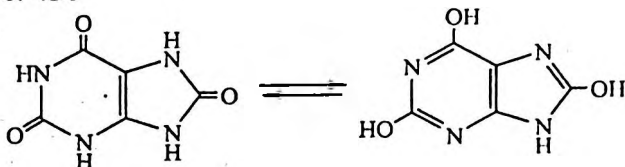
tautomer birikma qanday nomlanadi?

- A) guanin; B) kofein; C) adenin; D) siydik

kislota.

12, c. 431

67.



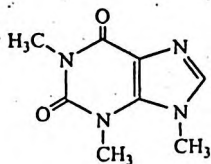
tuzilishli tautomer birikmani nomlang.

- A) adenin; B) guanin; C) kofein; D) siydik

kislota.

12, c. 432

68.

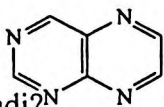


tuzilishli birikmaning nomi:

- A) ksantin; B) kofein; C) guanin; D) adenin.

12, c. 434

69.



tuzilishli geterotsikl qanday

nomlanadi?

- A) tetrazin; B) pteridin; C) dipirazin; D) dipiridazin.

12, c. 437

70. Pteridinda qaysi geterotsikllar kondensirlangan?

- A) pirimidin va piridazin; B) pirazin va piridazin;
C) pirimidin va pirazin; D) piridin va piridazin.

12, c. 437

71. Sitozin qaysi muhim tabiiy birikmalar tarkibiga kiradi?
 A) fermentlar; B) vitaminlar;
 C) alkaloidlar; D) nuklein kislotalar.
 3. c. 708
72. Uratsil qaysi muhim tabiiy birikmalar tarkibiga kiradi?
 A) alkaloidlar; B) nukleozidlar va nuklein kislotalar;
 C) fermentlar; D) gormonlar.
 3. c. 708
73. Timin qaysi muhim tabiiy birikmalar tarkibiga kiradi?
 A) nukleozidlar, nukleotidlar va nuklein kislotalar;
 B) flavonoidlar; C) kumarinlar; D) vitaminlar.
 3. c. 708
74. Adenin (6-aminopurin) qaysi muhim tabiiy birikmalar tarkibiga kiradi?
 A) steroidli alkaloidlar; B) xinolizidin alkaloidlari;
 C) nukleozidlar, nukleotidlar va nuklein kislotalar;
 D) fermentlar.
 3. c. 711
75. Guanin (2-amino-6-gidroksipurin) qaysi muhim tabiiy birikmalar tarkibiga kiradi?
 A) piridin alkaloidlari; B) fermentlar;
 C) flavonoidlar;
 D) nukleotidlar, nukleozidlar va nuklein kislotalar.
 3. c. 712
76. Kofein qanday maqsadlarda ishlatiladi?
 A) gerbitsid sifatida;
 B) insektitsid sifatida;
 C) purin hosilalarini sintez qilishda;
 D) tibbiyotda markaziy asab tizimining stimulyatori sifatida.
 3. c. 712
77. RNK gidrolizida oxirgi mahsulotlar sifatida qaysi birikmalar hosil bo'ladi?
 A) pirazin, timin, adenin, pirimidin, D-riboza va fosfat kislota;
 B) piridazin, piridin, piperidin, D-riboza va fosfat kislota;
 C) uratsil, sitozin, adenin, guanin, D-riboza va fosfat kislota;
 D) pirrolidin, piperazin, sitozin, D-riboza va fosfat kislota.
 3. c. 712

78. DNK gidrolizida oxirgi mahsulotlar sifatida qaysi birikmalar hosil bo'ladi?

- A) timin, sitozin, adenin, guanin, D-dezoksiriboza va fosfat kislota;
- B) uratsil, guanin, pirazin, piperidin, D-riboza va fosfat kislota;
- C) sitozin, adenin, piperazin, piridin, D-riboza va fosfat kislota;
- D) uratsil, sitozin, piridazin, pirimidin, D-dezoksiriboza va fosfat kislota.

3, c. 712-713

79. $\text{Purin} + \text{CH}_3\text{I} \longrightarrow \dots$

Reaksiya mahsuloti qaysi metilpurin?

- A) 1-metilpurin;
- B) 3-metilpurin;
- C) 7-metilpurin;
- D) 9-metilpurin

3, c. 710

80. Quyidagi geterotsikllarning qaysi biri nisbatan kuchli asos?

- A) pirazin;
- B) piridin;
- C) pirimidin;
- D) piridazin.

3, c. 706

20. Metil – kation $\text{H}_3\text{C}^{\oplus}$ da uglerod atomi zaryadi (Z_C) ni hisoblang.

- A) 0
- B) +1
- C) -1
- D) +2

2, t.1, c. 40.

21. Metil – radikal $\text{H}_3\text{C}^{\cdot}$ da uglerod atomi zaryadi (Z_C) ni hisoblang.

- A) 0
- B) +1
- C) -1
- D) +2

2, t.1, c. 40.

22. Metil – anion $\text{H}_3\text{C}^{\ominus}$ da uglerod atomi zaryadi (Z_C) ni hisoblang.

- A) 0
- B) +1
- C) -1
- D) +2

2, t.1, c. 40.

23. Metilgidroksoniy – ion $\text{H}_3\text{C}^{\oplus}\text{OH}_2$ da kislorod atomi zaryadi (Z_O) ni hisoblang.

- A) +2
- B) -2
- C) 0
- D) +1

2, t.1, c. 40.

27. O`rin olish (almashinish) reaksiyalari qaysi harf bilan belgilanadi?

- A) E
- B) A yoki Ad
- C) R
- D) S

2, т. I, с. 80.; 4, 28-b.

28. Birikish reaksiyalari qaysi harf bilan belgilanadi?

A) R B) E C) S D) A yoki Ad

2, т. I, с. 81.; 4, 28-b.

29. Ajralish reaksiyalari qaysi harf bilan belgilanadi?

A) A yoki Ad B) R C) E D) S

2, т. I, с. 81-82.; 4, 28-b.

31. Radikal o`rin olish reaksiyalari qanday belgilanadi?

A) E_R B) S_R C) S_N D) A_N

4, 31-b.

32. Elektrofil o`rin olish reaksiyalari qanday belgilanadi?

A) E_E B) S_E C) E_R D) E_N

4, 31-b.

33. Nukleofil birikish reaksiyalari qanday belgilanadi?

A) A_N B) A_E C) A_R D) E_N

4, 31-b.

34. Bimolekulyar nukleofil o`rin olish reaksiyalari qanday belgilanadi?

A) S_N2 B) S_N1 C) E2 D) E1

4, 31-b.

38. Etilen molekulasidagi π-bog` hosil bo`lishida uglerod atomining qaysi atom orbitallari bir-birini qoplaydi?

A) 2P_X B) 2P_Y C) 2P_Z D) 2S

2, т. I, с. 52.; 4, 89-90-b.

40. Vodorod bog`lanishlar energiyasi necha kkal/mol ga teng?

A) 5-10 B) 11-15 C) 16-20 D) 2-4

2, т. I, с. 69.

41. O`rinbosarlardan qaysi biri nisbatan kuchli musbat induktiv effekt (+I-effekt) namoyon qiladi?

A) CH₃- B) CH₃-CH₂- C) (CH₃)₂CH- D) (CH₃)₃C-

2, т. I, с. 62.

42. Quyidagi o`rinbosarlardan qaysi biri nisbatan kuchli manfiy induktiv effekt (-I-effekt) namoyon qiladi?

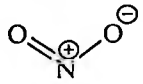
A) -Cl B) -F C) -CN D) -NO₂

2, т. I, с. 62.

43. Quyidagi o`rinbosarlardan qaysi biri nisbatan kuchsiz manfiy induktiv effekt (-I-effekt) namoyon qiladi?

- A) -OH B) -NH₂ C) CH₂=CH- D) C₆H₅-
2, τ.1, c. 62.

44. Quyidagilardan qaysi biri nisbatan kuchli manfiy induktiv effekt (-I-effekt) namoyon qiladi?

- A) $\ominus\text{OH}_2$  B) C) $\ominus\text{NH}_3$ D) $\ominus\text{N}(\text{CH}_3)_3$
2, τ.1, c. 62.

46. Uglerod atomida vakant p-orbitali bor zaryadlangan zarracha qanday nomlanadi?

- A) kation-radikal B) karbkation C) erkin radikal D) karbanion

2, τ.1, c. 83.

47. Uglerod atomida umumlashmagan elektron jufti bor zaryadlangan zarracha qanday nomlanadi?

- A) anion-radikal B) karbanion C) erkin radikal D) karbkation

2, τ.1, c. 83.

50. Nukleofil zarracha bilan uning elektron jufti hisobiga bog` hosil qiladigan, elektronakseptor xossasiga ega musbat zaryadlangan zarrachalar qanday umumiy nom bilan yuritiladi?

- A) nukleofil reagentlar B) elektrofil reagentlar
C) anion-radikallar D) karbanionlar

3, 71-b.; 4, 30-31-b.

51. Atseton $\text{H}_3\text{C}-\overset{\text{O}^{\delta-}}{\parallel}{\text{C}}^{\delta+}-\text{CH}_3$ dagi kislorod atomi qanday markaz?

- A) elektrofil B) nukleofil C) radikal D) ion-radikal
4, 31-b.

54. Nitrometan qanday kislota?

- A) CH- B) NH- C) OH- D) Lyuis kislotasi
4, 34-35-b.

55. Etil spirti qanday kislota?

- A) CH- B) Lyuis kislotasi C) OH- D) qattiq

4, 34-37-b.

56. Qattiq va yumshoq kislotalar hamda asoslar prinsipini qaysi olim ilgari surgan?

A) L. Paster B) R. Pirson C) A. Pikte D) V. Prelog

4, 57-b.

64. Birikmalarning qaysi birida uchlamchi uglerod atomi bor?

A) $\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)_2$ B) $\text{CH}_3(\text{CH}_2)_3\text{C}(\text{CH}_3)_3$
C) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$ D) uchala birikmada ham yo`q

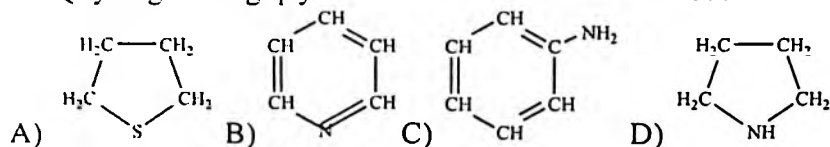
4, 65-b.

67. Propanda uglerod qaysi valentlik holatida bo`ladi?

A) uchinchi B) ikkinchi C) birinchi D) ikkinchi va uchinchi

4, 71-b.

72. Quyidagilarning qaysi biri karbotsiklik birikma hisoblanadi?



2. T.I, c. 34.; 4, 15-b.

74. A yoki Ad qanday reaksiya belgisi?

A) o`rin olish B) ajralish C) qayta guruhlanish D) birikish

2. T.I, c. 81.; 4, 28-b.

76. Monomolekulyar nukleofil ajralish reaksiyasi qanday belgilanadi?

A) E_E B) E_{N2} C) E_{N1} D) E_R

4, 157-158-b.

77. Birikmalarning qaysi birida o`rinbosar manfiy induksion effekt namoyon bo`ladi?

A) $\text{CH}_3\text{-CH}_3$ B) $\text{CH}_3\text{-Li}$ C) $\text{CH}_3\text{-CH}_2\text{-Na}$ D) $\text{CH}_3\text{-CH}_2\text{-Cl}$

2. T.I, c. 61-62.; 4, 22-b.

78. Birikmalarning qaysi birida o`rinbosar musbat induksion effekt namoyon bo`ladi?

A) $\text{CH}_3\text{-Cl}$ B) $\text{CH}_3\text{-NO}_2$ C) $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-Na}$ D) $\text{CH}_3\text{-CN}$

2. T.I, c. 61-62.; 4, 22-b.

79. Induksion effektdan foydalanib galogen karbon kislotalarning qaysi biri eng kuchli ekanligini ko'rsating?

- A) $\text{CH}_2\text{I}-\text{COOH}$ B) $\text{CH}_2\text{F}-\text{COOH}$
 C) $\text{CH}_2\text{Cl}-\text{COOH}$ D) $\text{CH}_2\text{Br}-\text{COOH}$

2, τ.1, c. 62.

80. Induksion effektdan foydalanib karbon kislotalarning qaysi biri eng kuchli ekanligini ko'rsating?

- A) HCOOH B) CH_3COOH
 C) $\text{CH}_2=\text{CH}-\text{COOH}$ D) $\text{CH}\equiv\text{C}-\text{COOH}$

2, τ.1, c. 62.

83. 1,3-butadiyenda mezomer effektning qaysi turi namoyon bo'ladi?

- A) π, π - B) π, p - C) σ, π - D) σ, σ -

4, 130-132-b.

84. σ, π - tutashish yoki giperkonyugatsiya birikmalarining qaysi birida hosil bo'ladi?

- A) $\text{H}_2\text{C}=\text{CH}-\text{CH}=\text{CH}_2$ B) $\text{HC}\equiv\text{CH}-\text{CH}=\text{CH}_2$
 C) $\text{H}_2\text{C}=\text{CH}-\text{Cl}$ D) $\text{H}_3\text{C}-\text{CH}=\text{CH}_2$

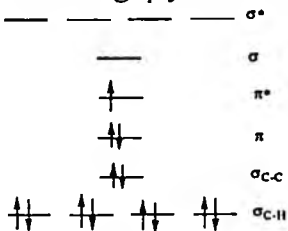
2, τ.1, c. 66.; 4, 23-b.

85. Vinil xloridda mezomer effektning qaysi turi vujudga keladi?

- A) π, π - B) π, p - C) σ, π - D) σ, σ -

4, 22-b.

89. Elektronlarning orbitallarda quyidagicha taqsimlanishi etilenning qaysi holati yoki zarrachasi uchun xos?



- A) Etilen molekulasining asosiy holati
 B) Etilen molekulasining qo'zg'algan holati
 C) Etilen kation-radikali $[\text{CH}_2-\overset{\bullet}{\text{C}}\text{H}_2]^+$
 D) Etilen anion-radikali $[\text{CH}_2=\text{CH}_2]^{-}$

3, 38-b.

90. Metan molekulasi energiya yutib, asosiy S_0 holatidan qo'zg'algan S_1 holatiga o'tganida qanday elektron o'tishi yuz beradi?

- A) $\sigma \rightarrow \sigma^*$ o'tish B) $\pi \rightarrow \pi^*$ o'tish
 C) $\sigma \rightarrow \pi^*$ o'tish D) $\pi \rightarrow \sigma^*$ o'tish

3, 37-b.

91. Etilen molekulasi energiya yutib, asosiy S_0 holatidan qo'zg'algan S_1 holatiga o'tganida qanday elektron o'tishi yuz beradi?

- A) $\sigma \rightarrow \sigma^*$ o'tish B) $\pi \rightarrow \pi^*$ o'tish
 C) $\sigma \rightarrow \pi^*$ o'tish D) $\pi \rightarrow \sigma^*$ o'tish

3, 37-b.

92. $\text{CH}\equiv\text{C}-\text{CH}=\text{CH}_2$ tuzilishli birikmada uglerod atomlari qanday gibrirlangan?

- A) faqat sp^3 B) faqat sp^2 C) faqat sp D) sp va sp^2

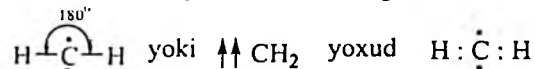
2, 1.1, c. 52-53.

93. Metil erkin radikali ($\bullet\text{CH}_3$) ni birinchi marta kim aniqlagan?

- A) R. Vudvord B) G. Vilyams C) F. Panet D) L. Gamet

1, 4.1, c. 353-354.; 13, 9-b.

94. Triplet holatidagi metilen quyidagicha tuzilgan:

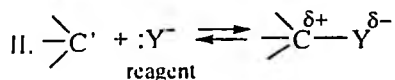
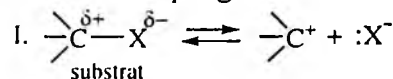


Bu biradikalda qanday gibrirlanish kuzatiladi?

- A) sp^3- B) sp^2- C) $sp-$ D) sp^3d^1-

15, 133-134-b.

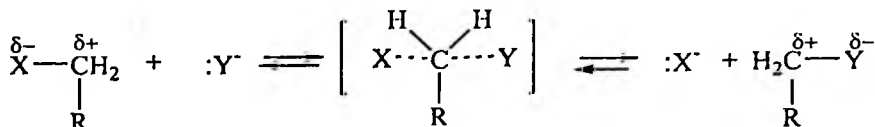
98. Quyidagi sxema bo'yicha kechadigan reaksiyaning mexanizmini aniqlang:



- A) E_N1 B) E_N2 C) S_N1 D) S_N2

2, 1.1, c. 597-603.; 4, 153-156-b.

99. Quyidagi sxema bo'yicha kechadigan reaksiyaning mexanizmini aniqlang:



Substrakt reagent o'tish holati
 A) E_{N1} B) E_{N2} C) S_{N1} D) S_{N2}

2, τ.1, c. 586-588; 4, 151-152-b

100. 10,02 mg kislorodli birikma yondirilganda, 26,46 mg CO₂ va 10,82 mg suv hosil bo'ldi. Shu moddaning empirik formulasini toping.

A) C₇H₁₆O B) C₆H₁₂O C) C₅H₈O D) C₄H₈O
 6, 6-7-b.

103. Indigo bo'yog'ining miqdoriy analizi uning tarkibida 73,3% C, 3,8% H va 10,7% N borligini ko'rsatdi. Uning molekulyar massasi

262. Indigoning molekulyar formulasini aniqlang.

A) C₁₃H₁₀O₂N₂ B) C₁₄H₁₀O₂N₂ C) C₁₅H₁₂O₂N₂ D) C₁₆H₁₀O₂N₂
 6, 6-7-b.

1. 2-, 2'-, 6- va 6'-holatlarida hajmi katta o'rinbosarlari bor bifenil hosilalarida qanday izomeriya uchraydi?

A) tautomeriya B) atropoizomeriya
 C) metameriya D) geometrik izomeriya

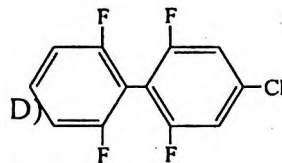
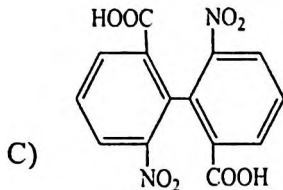
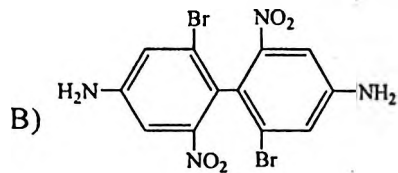
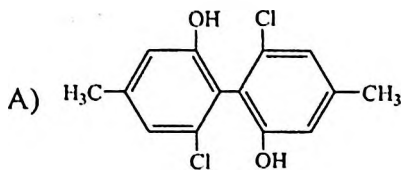
2, τ.1, c. 492; 26, 88-90-b.

2. Atropoizomeriyaning namoyon bo'lishi uchun difenil molekulasidagi o- va o'-o'rinbosarlarning o'lchami (Van-der-vaals radiuslari yig'indisi) qancha bo'lishi kerak?

A) 0,145 nm gacha B) 0,180 nm gacha
 C) 0,290 nm gacha D) 0,290 va undan ortiq nm

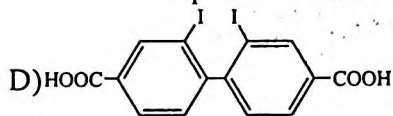
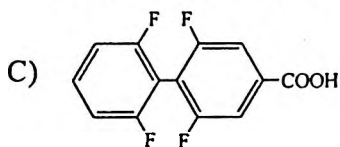
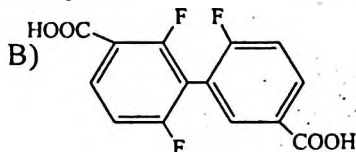
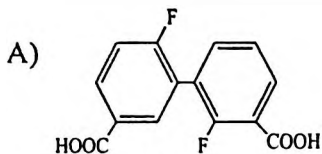
26, 88-90-b.

3. Birikmalarning qaysi birida difenil molekulasidagi ikkala halqa C-C (1-1') bog' atrofida erkin aylana oladi?



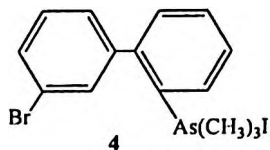
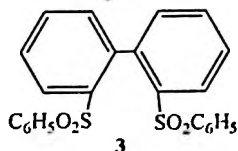
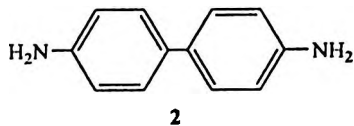
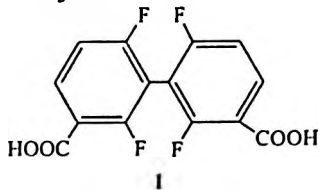
26, 88-90-b.

4. Birikmalarning qaysi birida difenil molekulasidagi ikkala halqa C-C (1-1') bog' atrofida erkin aylana olmaydi?



26, 88-90-b.

5. Birikmalarning qaysilari ikkita optik faol enantiomer holida mavjud bo'la oladi?



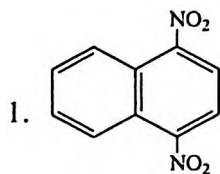
A) faqat 1

B) faqat 2

C) 3 va 4

D) 1 va 2

6, 339-b.



tuzilishli birikmani nomlang.

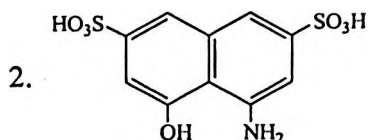
A) *o*-dinitronaftalin

B) *m*-dinitronaftalin

C) *p*-dinitronaftalin

D) ana-dinitronaftalin

6, 340-341-b; 26, 105-b.



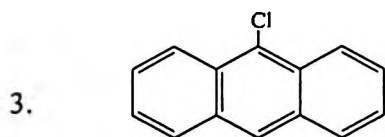
tuzilishli birikmani nomlang.

A) 1-amino-2-gidrokso-4,7-naftalindisulfokislota

B) 2-amino-1-gidrokso-4,7-naftalindisulfokislota

C) 4-amino-5-gidrokso-2,7-naftalindisulfokislota

D) 5-amino-4-gidrokso-2,7-naftalindisulfokislota



tuzilishli birikmani nomlang.

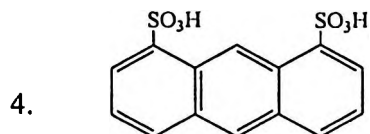
A) α -xloranratsen

B) β -xloranratsen

C) γ -xloranratsen

D) γ -xlorfenantren

26, 106-b.



tuzilishli birikmani nomlang.

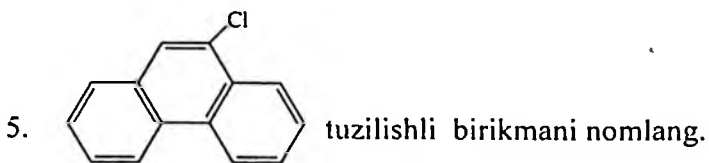
A) 1,3-anratsendisulfokislota

B) 2,4-anratsendisulfokislota

C) 1,8-anratsendisulfokislota

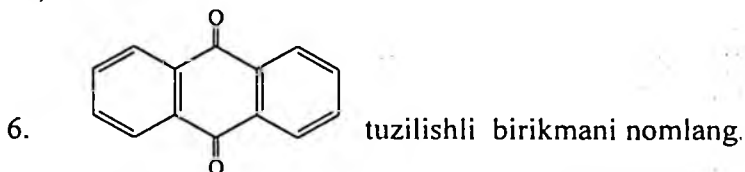
D) 2,7-anratsendisulfokislota

26, 106-b.



- A) 1-xlorfenantren
 B) 9-xlorfenantren
 C) 8-xlorfenantren
 D) 10-xlorfenantren

26, 104-b.



- A) 1,4-antraxinon
 B) 9,10-antraxinon
 C) 1,4-fenantrenxinon
 D) 9,10-fenantrenxinon

26, 116-b.

7. Naftalinning ikkita bir xil o'rinbosar tutgan dialmashingan hosilalari nechta izomer holida uchraydi?

- A) 6 ta
 B) 8 ta
 C) 9 ta
 D) 10 ta

26, 110-b.

8. Monoalmashingan naftalin hosilalarining nechta izomeri bor?

- A) 4 ta
 B) 3 ta
 C) 2 ta
 D) 1 ta

26, 109-b.

9. Fenantrenning monoalmashingan hosilalari nechta izomer holida uchraydi?

- A) 5 ta
 B) 4 ta
 C) 3 ta
 D) 2 ta

26, 119-b.

10. Barcha izomer nitronaftilaminlarning soni nechta?

- A) 11 ta
 B) 12 ta
 C) 13 ta
 D) 14 ta

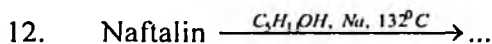
6, 342- va 345-b.

11. Naftalin $\xrightarrow{C_2H_5OH, Na, 78^\circ C}$...

Reaksiya natijasida qanday aromatik birikma(lar) hosil bo'ladi?

- A) tetralin
 B) 1,4-digidronaftalin
 C) tetralin va dekalin
 D) dekalin

26, 111-b.



Reaksiya natijasida qaysi aromatik birikma(lar) hosil bo`ladi?

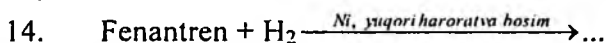
A) dekalin
B) tetralin (1,2,3,4-tetragidronaftalin)

C) 1,4-digidronaftalin
D) dekalin va 1,4-digidronaftalin
26, 111-b.



Qaysi organik birikma(lar) hosil bo`ladi?

A) 1,2-digidrofenantren
B) 3,4-digidrofenantren
C) pergidrofenantren
D) 9,10-digidrofenantren
26, 121-b.

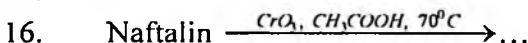


Qaysi organik birikma(lar) hosil bo`ladi?

A) 9,10-digidrofenantren
B) pergidrofenantren
C) 1,2,3,4-tetragidrofenantren
D) 5,6,7,8-tetragidrofenantren
26, 121-b.

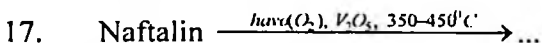
15. Naftalin xlorlanganda asosan qaysi monoxlor-naftalinlar hosil bo`ladi?

A) ~50% α- va ~50% β-xlor-naftalin
B) ~60% α- va ~40% β-xlor-naftalin
C) ~10% α- va ~90% β-xlor-naftalin
D) ~90% α- va ~10% β-xlor-naftalin
26, 113-b.



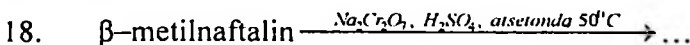
Reaksiya mahsuloti qanday organik modda?

A) 2,6-naftoxinon
B) ftal kislota
C) 1,4-naftoxinon
D) ftal anhidrid
1, 4.2, c. 387



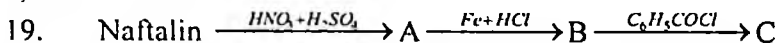
Qaysi organik birikma hosil bo`ladi?

A) 1,4-naftoxinon
B) 2,6-naftoxinon
C) ftal anhidrid
D) tereftal kislota
26, 113-b.



Reaksiyaning organik mahsulotini nomlang.

- A) ftal kislota
 B) izoftal kislota
 C) 1,4-naftaxinon
 D) 2-metil-1,4-naftaxinon
 6, 343- va 346-b.



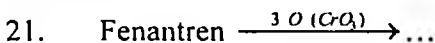
C mahsulotni nomlang.

- A) 2-benzoil- α -naftilamin
 B) 3-benzoil- α -naftilamin
 C) 4-benzoil- α -naftilamin
 D) N-(1-naftil)-benzamid
 6, 344- va 347-b.



Reaksiyaning organik mahsulotini nomlang

- A) 1-bromfenantren
 B) 2-bromfenantren
 C) 3-bromfenantren
 D) 9-bromfenantren
 26, 120-b.



Reaksiyaning organik mahsulotini nomlang.

- A) 1,2-fenantrenxinon
 B) 3,4-fenantrenxinon
 C) 9,10-fenantrenxinon
 D) 7,8-fenantrenxinon
 26, 121-b.

22. Anratsenning qaysi holatlari oksidlanish, elektrofil almashinish va birikish reaksiyalarida faol?

- A) 1- va 2-holatlari
 B) 7- va 8-holatlari
 C) 9- va 10-holatlari
 D) 5- va 6-holatlari
 26, 117-b.

23. Fenantrenning qaysi holat(lar)i almashinish, oksidlanish va almashinish reaksiyalarida faol?

- A) 1-holati
 B) 2-holati
 C) 3- va 4-holatlari
 D) 9- va 10-holatlari
 26, 120-121-b.

54. Naftalinning UB-spektrida yutilish maksimumlari qaysi sohada kuzatiladi?

- A) 170 va 208 nm
 B) 160 va 198 nm
 C) 275 va 314 nm
 D) 190 va 235 nm

8, c. 451

55. Anratsenning UB-spektrida yutilish maksimumlari qaysi sohada yotadi?

- A) 190 va 220 nm
 B) 350 va 318 nm

C) 210 va 244 nm

D) 234 va 264 nm

8, c. 455

56. IQ-spektrlarda naftalin C=C bog'lari qaysi sohada yutadi?

A) 2100-2000 sm^{-1}

B) 2000-1900 sm^{-1}

C) 1800-1700 sm^{-1}

D) 1600-1500 sm^{-1}

8, c. 451

57. Anratsenni gidrogenlab olingan birikmaning PMR-spektrida δ 4,0 va 7,2 m.h. maydonda (intensivlik nisbati 1:2) ikkita singlet signallar bor. Birikmaning tuzilishini aniqlang.

A) dekadidroanratsen

B) 1.2.3.4-tetragidroanratsen

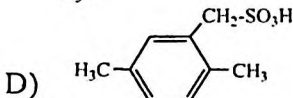
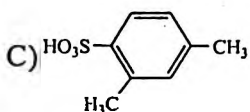
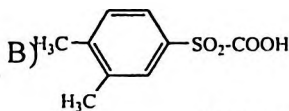
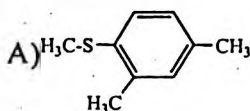
C) 9-10-digidroanratsen

D) 1.2.3.4.5.6.7.8-oktagidroanratsen

17, c. 91

17, c. 91

1. 2,4-dimetilbenzolsulfokislolaning tuzilishi formulasini ko'rsating.

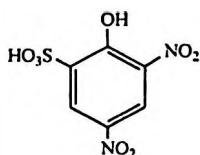


3, c. 254;

6, 288-b;

26, 165-b.

2.



tuzilishli birikmani nomlang.

A) 2-gidroksi-3,5-dinitrobenzolsulfon

B) 2-gidroksi-3,5-dinitrobenzolsulfonit

C) 2-gidroksi-3,5-dinitrofenilsulfon

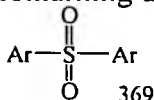
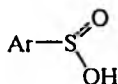
D) 2-gidroksi-3,5-dinitrobenzolsulfokislota

3, c. 254;

6, 288-b;

26, 165-b.

3. Benzol qatori sulfonlarning umumiy formulasini aniqlang.



369

- A) B) C) Ar-SH D) Ar-S-S-Ar

3. c. 360-367-b; 19, кн. II, с. 60-70

4. $\text{Ar}-\overset{\text{O}}{\parallel}{\text{S}}-\text{Ar}$ qanday birikmalarning umumiy formulasi?

- A) benzol qatori sulfin kislotalarining
 B) benzol qatori sulfooksidlarining
 C) benzol qatori sulfonlarining
 D) benzol qatori merkaptanlarining

3, c. 360

5. Toluolning halqada sulfoguruh tutgan nechta monosulfokislotalari bor?

- A) 2 ta B) 3 ta C) 4 ta D) 5 ta

6. Benzol yadrosida ikkita sulfoguruh tutgan $\text{C}_7\text{H}_8\text{S}_2\text{O}_6$ tarkibli disulfokislotalar nechta izomer holida uchraydi?

- A) 4 ta B) 5 ta C) 6 ta D) 7 ta

19, кн. II, с. 24-25

7. Benzol halqasida metil-, sulfo- va nitroguruhi bo'lgan birikmalarning nechta izomeri bo'lishi mumkin?

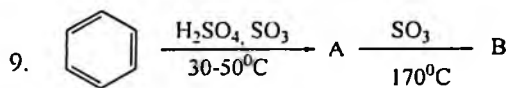
- A) 7 B) 8 C) 9 D) 10

18, 407-b.

8. Benzol va uning gomologlarini sulfolash qanday mexanizm bo'yicha boradi?

- A) $\text{S}_{\text{N}}1$ B) $\text{S}_{\text{N}}2$ C) $\text{E}1$ D) $\text{E}2$

18. 430-b; 22, с. 383



Reaksiyaning oxirgi (B) mahsuloti qanday organik modda(lar)?

A) asosan *m*- benzoldisulfokislota va juda oz miqdorda *p*- benzoldisulfokislota

B) *m*- va *o*- benzoldisulfokislotalarning teng miqdordagi aralashmasi

C) *o*- va *p*- benzoldisulfokislotalar

D) *o*- va *p*- benzoldisulfokislotalarning teng miqdordagi aralashmasi

22, c. 382-383; 26, 166-167-b.

10. Arenlarni tutovchi sulfat kislota bilan sulfolaganda qaysi faol elektrofil reagent (lar) benzol halqasiga bevosita hujum qiladi?

- A) asosan gidrosulfoniy kationi $^+\text{SO}_3\text{H}$
- B) asosan neytral sulfat anhidrid SO_3
- C) asosan protonlangan sulfat kislota $[\text{H}_3\text{SO}_4]^+$
- D) $^+\text{SO}_3\text{H}$ va $[\text{H}_3\text{SO}_4]^+$

26, 167-168-b.

11. Arenlarni 100 % li yoki konsentrlangan sulfat kislota bilan sulfolaganda qaysi faol elektrofil reagent(lar) benzol halqasiga bevosita hujum qiladi?

- A) asosan gidrosulfoniy kationi $^+\text{SO}_3\text{H}$
- B) asosan neytral sulfat anhidrid SO_3
- C) asosan protonlangan sulfat kislota $[\text{H}_3\text{SO}_4]^+$
- D) $^+\text{SO}_3\text{H}$ va SO_3

15, c. 340; 22, c. 383; 26, 167-168-b.

12. Birikmalarning qaysi biri nisbatan eng oson sulfolanadi?

- A) brombenzol
- B) benzolsulfokislota
- C) toluol
- D) benzol

6, 291-293-b.

13. Birikmalarning qaysi biri nisbatan eng qiyin sulfolanadi?

- A) brombenzol
- B) benzolsulfokislota
- C) toluol
- D) *m*- benzoldisulfokislota

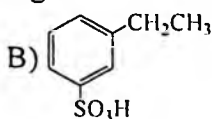
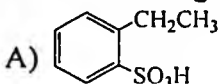
6, 291-293-b.

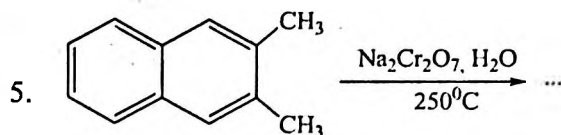
14. Benzol halqasi bilan bog`langan sulfoguruh qanday effekt namoyon qiladi?

- A) +I
- B) -I va +M
- C) +M ($p \pi$)
- D) +M ($\sigma \pi$)

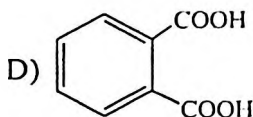
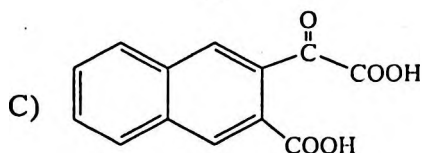
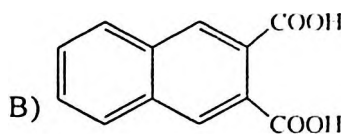
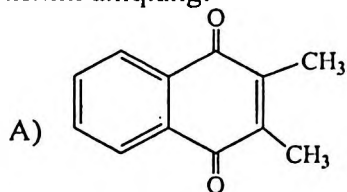
2, 1.2, c. 336

15. Kaliy permanganat bilan oksidlanganda *p*-sulfobenzoy kislota. ishqor qo`shib kuchli qizdirganda va so`ngra suyultirilgan xlorid kislota ta`sir ettirganda esa *p*-etilfenol hosil qiladigan $\text{C}_8\text{H}_{10}\text{SO}_3$ tarkibli birikmaning tuzilishini aniqlang.





Reaksiya natijasida hosil bo'ladigan organik moddaning tuzilishini aniqlang:



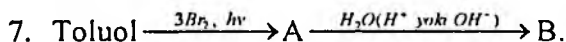
1, ч.2, с. 387



Reaksiya mahsuloti qaysi aromatik kislota?

- A) benzoy kislota B) *p*-toluil kislota
C) fenilsirka kislota D) salitsil kislota

1, ч.3, с. 177; 26, 235-b.



Reaksiyaning oxirgi (B) mahsuloti qaysi aromatik kislota?

- A) benzoy kislota B) fenilsirka kislota
C) *p*-toluil kislota D) fenilpropion kislota

26, 131- va 235-236-b.

8. Tereftal kislota sanoatda asosan qaysi usul bilan olinadi?

A) naftalinni V_2O_5 saqlagan katalizator ustida bug'-gaz fazali oksidlash

- B) *p*-ksilolni havo kislorodi bilan suyuq fazada oksidlash
C) ftal kislotani $400^\circ C$ da katalizator ishtirokida qizdirish
D) ftal angidridiga suvni birlashtirish

2, т.2, с. 315; 3, с. 563; 26, 250-b.

9. Karboksil guruhi aromatik halqaga qanday ta'sir ko'rsatadi va S_EAr reaksiyalarida o`rinbosarlarni qaysi holat(lar)ga yo`naltiradi?

- A) halqa faolligini oshirib, *o*-holatga yo`naltiradi
- B) halqa faolligini oshirib, *p*-holatga yo`naltiradi
- C) halqa faolligini oshirib, *m*-holatga yo`naltiradi
- D) halqa faolligini kamaytirib, *m*-holatga yo`naltiradi

26. 68-70- va 236-237-b.

10. Aromatik halqa bilan bevosita bog`langan karboksil guruhi qanday effektlarni namoyon qiladi?

- A) -I va -M B) +I va +M C) -I va +M D) +I va -M

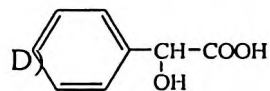
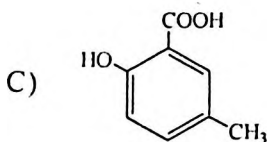
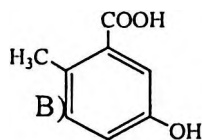
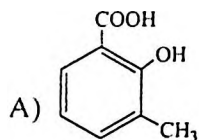
26. 236-237-b.

11. *p*-brom-, *p*-yod-, *p*-xlor- va *p*-ftorbenzoy kislotalardagi galogenlar qanday effektlarni namoyon qiladi?

- A) +I va -M B) +I va +M C) -I va +M D) -I va -M

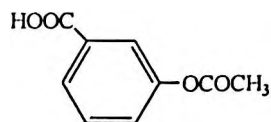
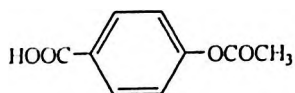
6. 314-b.

12. Ishqorning suvdagi eritmasida yaxshi eriydigan, kislota va spirtlar bilan murakkab efirlarni hosil qiladigan, FeCl₃ bilan rang bermaydigan, oksidlanganida benzoy kislota hosil bo`ladigan C₈H₈O₃ tarkibli optik faol moddaning tuzilishini aniqlang:



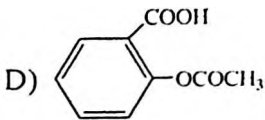
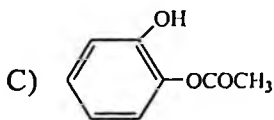
6. 313- va 316-b.

13. Natriy fenolyati $\xrightarrow{120-140^{\circ}C, \text{ bosim}}$ A $\xrightarrow{(CH_3CO)_2O}$ B.
B moddaning tuzilishini aniqlang.

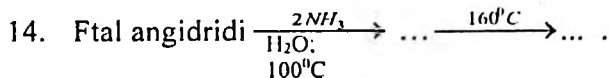


A)

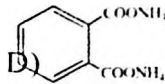
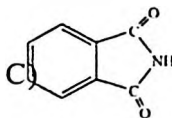
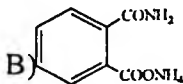
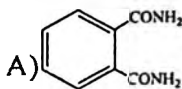
B)



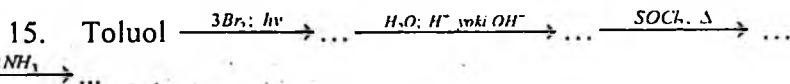
26, 241-242-b.



Reaksiyalar oxirgi mahsulot tuzilishini aniqlang:



1, v. 3, c. 238



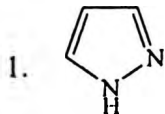
Reaksiyalar oxirgi mahsulotini nomlang.

A) benzoy kislota amidi
C) *o*-aminobenzoy kislota

B) benzoy kislota nitrili
D) *m*-aminobenzoy

kislota

2, t.2, c. 209; 26, 238-239-b.

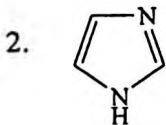


tuzilishli geterotsiklni nomlang.

A) imidazol
C) pirazin

B) pirazol
D) piridazin

26, 317-b.

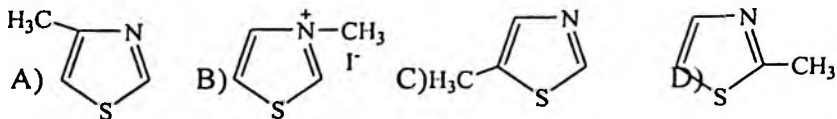


tuzilishli geterotsikl qanday nomlanadi?

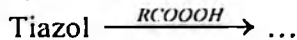
A) piridazin
C) pirazin

B) imidazol
D) pirazol

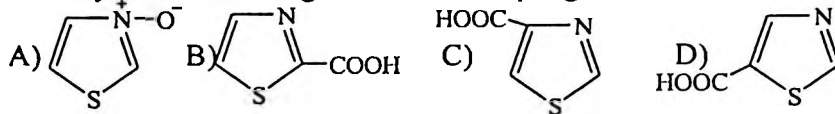
26, 317-b.



26, 325-b.



Reaksiya mahsulotining tuzilishini aniqlang.




26, 325-326-b.

10. Tiazol elektrofil almashinish reaksiyalariga qiyin kirishish, shuningdek nukleofil reagentlar bilan reaksiyaga kirishishi jihatidan qaysi geterotsiklga o`xshaydi?


- A) pirrolga B) tiofenga C) oksazolga D) piringa

26, 325-b.

1.  tuzilishli birikmani nomlang.

- A) α -digidropiran B) β -piran
C) β -digidropiran D) α -piran

6, 354-b; 11, c. 578; 12, c. 292

2.  tuzilishli birikma qanday nomlanadi?

- A) α -piran B) β -piran C) γ -digidropiran D) γ -piran

3. Barcha izomer dibrompiridinlarning soni nechta?

- A) 5 ta B) 6 ta C) 4 ta D) 7 ta

6, 355- va 357-b.

4. Pikolin (monometilpiridin)larning soni nechta?

- A) 6 ta B) 3 ta C) 5 ta D) 4 ta

6, 355- va 357-b.

5. Monometilpiperidinlarning nechta izomeri bor?

13. Piridinning qaysi holat(lar)i nukleofil o`rin olish reaksiyalariga kirishish qobiliyatiga ega?

- A) β -holati
B) β' -holati
C) faqat α - va α' -holatlari
D) α , α' - va γ -holatlari

26, 331-b.

14. Furan, tiofen, benzol va piridinning qaysi biri elektrofil o`rin olish reaksiyalariga eng qiyin kirishadi?

- A) benzol
B) piridin
C) tiofen
D) furan

26, 330-331-b.

15. Nukleofil o`rin olish reaksiyalarida xinolin molekulasining qaysi holati eng faol?

- A) α -holati
B) β -holati
C) γ -holati
D) o-holati

26, 337-b.

16. Piridin $AlCl_3$ katalizatorligida atsetil xloridi bilan Fridel-Krafts bo`yicha atsillash reaksiyasiga kirishadimi? Kirishsa qanday mahsulot hosil bo`ladi?

- A) 2-atsetilpiridin
B) reaksiyaga kirishmaydi
C) 3-atsetilpiridin
D) 4-atsetilpiridin

26, 333-b.

17. Piridin kerosinda natriy amid bilan qizdirilganda qaysi geterotsiklik birikma hosil bo`ladi?

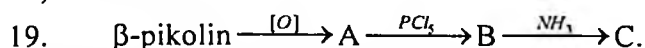
- A) 3-aminopiridin va 4-aminopiridin aralashmasi
B) 4-aminopiridin
C) 2-aminopiridin
D) 3-aminopiridin

8, c. 489; 12, c. 246

18. Piridinning spirdagi eritmasiga natriy ta'sir ettirganda hosil bo`ladigan geterotsikl(lar)ni nomlang:

- A) piperidin
B) digidropiridin
C) tetragidropiridin
D) 2-metilpirrolidin

26, 334-335-b.

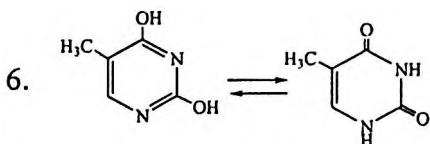


C mahsulotning tuzilishini aniqlang va uni nomlang:

- A) α -piridinkarbon kislota amidi
B) β -piridinkarbon kislota amidi

A) 1,3-dioksen; B) 1,2-dioksan; C) 1,2-dioksen; D) 1,4-dioksen.

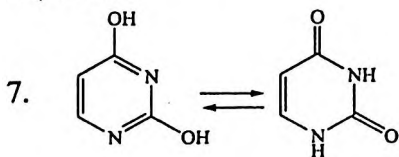
12, c. 358



tuzilishli tautomer birikma qanday nomlanadi?

A) uratsil; B) timin; C) sitozin; D) barbitur kislota.

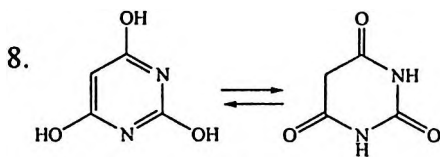
26, 342-b.



tuzilishli tautomer birikma qanday nomlanadi?

A) uratsil; B) timin; C) sitozin; D) barbitur kislota.

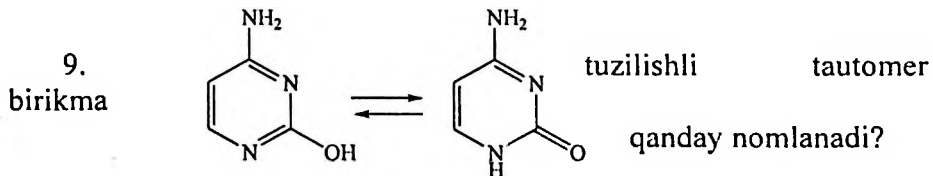
26, 340-b.



tuzilishli tautomer birikma qanday nomlanadi?

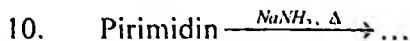
A) uratsil; B) timin; C) sitozin; D) barbitur kislota.

26, 340-b.



A) barbitur kislota; B) timin; C) uratsil; D) sitozin;

26, 342-b.



Ushbu reaksiya kimning nomi bilan yuritiladi?

- A) Nifantev; B) Chichibabin; C) Sukervanik; D) Konovalov.

3, c. 707



Qanday organik mahsulot(lar) hosil bo`ladi?

- A) geksagidropiridazin; B) tetrametilendiamin;
C) butan va gidrazin; D) 2 mol etilamin.

3, c. 707

12. Etilenglikol 4% li H_2SO_4 yoki suvsiz $FeSO_4$ bilan qizdirilganda hosil bo`ladigan geterotsiklik birikmani nomlang.

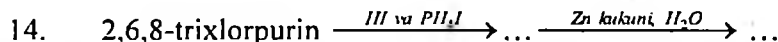
- A) 1,4-dioksan; B) 1,4-dioksen; C) 1,3-dioksan; D) 1,3-dioksen.

12, c. 359

13. Purinda qaysi geterotsikllar o`zaro kondensirlangan?

- A) pirazin va pirazol; B) piridazin va pirazol;
C) pirimidin va imidazol; D) piridin va pirazin.

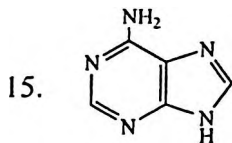
12, c. 413



Reaksiyalarning oxirgi mahsuloti qaysi geterotsiklik birikma?

- A) pteridin; B) purin; C) siydik kislota; D) ksantin.

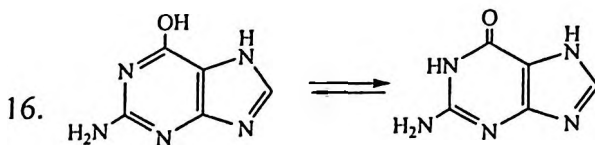
12, c. 414



tuzilishli birikma qanday nomlanadi?

- A) adenin; B) guanin; C) kofein; D) teobromin.

12, c. 429

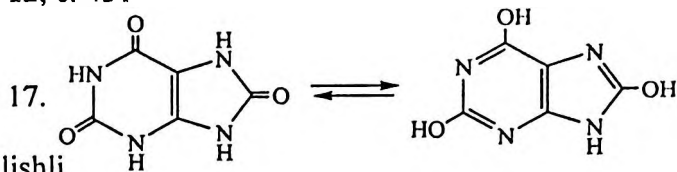


tautomer birikma qanday nomlanadi?

tuzilishli

A) guanin; B) kofein; C) adenin; D) siydik kislota.

12, c. 431

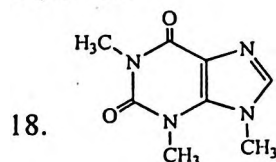


tuzilishli

tautomer birikmani nomlang.

A) adenin; B) guanin; C) kofein; D) siydik kislota.

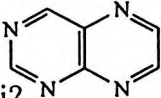
12, c. 432



tuzilishli birikmaning nomi:

A) ksantin; B) kofein; C) guanin; D) adenin.

12, c. 434

19.  tuzilishli geterotsikl qanday nomlanadi?

A) tetrazin; B) pteridin; C) dipirazin; D) dipiridazin.

12, c. 437

20. Pteridinda qaysi geterotsikllar kondensirlangan?

A) pirimidin va piridazin; B) pirazin va piridazin;

C) pirimidin va pirazin; D) piridin va piridazin.

12, c. 437

21. Sitozin qaysi muhim tabiiy birikmalar tarkibiga kiradi?

A) fermentlar; B) vitaminlar;

C) alkaloidlar; D) nuklein kislotalar.

3, c. 708

37. Uratsil qaysi muhim tabiiy birikmalar tarkibiga kiradi?

A) alkaloidlar; B) nukleozidlar va nuklein

kislotalar;

C) fermentlar;

D) gormonlar.

3, c. 708

38. Timin qaysi muhim tabiiy birikmalar tarkibiga kiradi?

- A) nukleozidlar, nukleotidlar va nuklein kislotalar;
- B) flavonoidlar; C) kumarinlar; D) vitaminlar.

3, c. 708

39. Adenin (6-aminopurin) qaysi muhim tabiiy birikmalar tarkibiga kiradi?

- A) steroidli alkaloidlar; B) xinolizidin alkaloidlari;
- C) nukleozidlar, nukleotidlar va nuklein kislotalar;
- D) fermentlar.

3, c. 711

40. Guanin (2-amino-6-gidroksipurin) qaysi muhim tabiiy birikmalar tarkibiga kiradi?

- A) piridin alkaloidlari; B) fermentlar;
- C) flavanoidlar;
- D) nukleotidlar, nukleozidlar va nuklein kislotalar.

3, c. 712

41. Kofein qanday maqsadlarda ishlatiladi?

- A) gerbitsid sifatida;
- B) insektitsid sifatida;
- C) purin hosilalarini sintez qilishda;
- D) tibbiyotda markaziy asab tizimining stimulyatori sifatida.

3, c. 712

45. RNK gidrolizida oxirgi mahsulotlar sifatida qaysi birikmalar hosil bo'ladi?

- A) pirazin, timin, adenin, pirimidin, D-riboza va fosfat kislota;
- B) piridazin, piridin, piperidin, D-riboza va fosfat kislota;
- C) uratsil, sitozin, adenin, guanin, D-riboza va fosfat kislota;
- D) pirrolidin, piperazin, sitozin, D-riboza va fosfat kislota.

3, c. 712

46. DNK gidrolizida oxirgi mahsulotlar sifatida qaysi birikmalar hosil bo'ladi?

- A) timin, sitozin, adenin, guanin, D-dezoksiriboza va fosfat kislota;
- B) uratsil, guanin, pirazin, piperidin, D-riboza va fosfat kislota;
- C) sitozin, adenin, piperazin, piridin, D-riboza va fosfat kislota;
- D) uratsil, sitozin, piridazin, pirimidin, D-dezoksiriboza va fosfat kislota.

3, c. 712-713

48. Purin + CH₃I → ...

Reaksiya mahsuloti qaysi metilpurin?

A) 1-metilpurin; B) 3-metilpurin; C) 7-metilpurin; D) 9-metilpurin

3, c. 710

51. Quyidagi geterotsikllarning qaysi biri nisbatan kuchli asos?

A) pirazin; B) piridin; C) pirimidin; D) piridazin.

3, c. 706

1. Tarkibida 55 ta uglerod atomi bor alkanning molekulyar formulasini aniqlang.

C₅₅H₁₁₂

C₅₅H₁₀₈

C₅₅H₁₁₀

C₅₅H₁₀₆

2. Quyidagi formulalar orasidan bir xil (faqat yozilishi bilangina farq qiladigan) lari bormi? 1) C₂H₅CH(CH₃)CH₂C(CH₃)₃;
2) CH₃CH(C₂H₅)CH₂CH(CH₃)CH₃;

3) (ikkilamchi-C₄H₉)CH₂(izo-C₃H₇)

2 va 3 bir xil

bir xillari yo`q

1 va 3 bir xil

1 va 2 bir xil

3. Pentil radikallarining soni nechta?

Sakkizta

Oltita

Beshta

Yettita

4. Radikallarning qaysi biri neopentil deb ataladi?

(CH₃)₃CCH₂-

(CH₃)₂CHCH(CH₃)-

(CH₃)₂CHCH₂CH₂-

CH₃(CH₂)₂CH(CH₃)-

5. (CH₃)₂CHCH(CH₃)CH(CH₃)(C₂H₅) tuzilishli uglevodorodni sistematik nomenklaturaga binoan nomlang.

2,3,4-trimetilgeksan

2,3-dimetil-3-etilpentan

3,4,5-trimetilgeksan

2-izopropil-3-etilbutan

6. Quyidagi uglevodorodni sistematik nomenklaturaga binoan nomlang. $\text{CH}_3(\text{CH}_2)_3\text{CH}(\text{CH}_3)\text{CH}(\text{CH}_2\text{CH}_2\text{CH}_3)_2$

5-metil-4-propilnonan

dipropil-1-metilpentilmetan

5-metil-6-propilnonan

Dipropilizogeksilmetan

7. $(\text{CH}_3)_2\text{CHCH}_2\text{CH}(\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_3)\text{CH}_2\text{CH}(\text{CH}_3)_2$ tuzilishli uglevodorodni sistematik nomenklaturaga binoan nomlang.

2,6-dimetil-4-ikkilamchibutilgeptan

4-izobutil-2,5-dimetilgeptan

Izobutildiikkilamchibutilmetan

Diizobutilikkilamchibutilmetan

8. 2-metil-3-etilbutan sistematik nomenklatura qoidalariga muvofiq to`g`ri nomlanganmi?

bosh zanjir noto`g`ri tanlangan

to`g`ri nomlangan

nomning tarkibiy qismlari noto`g`ri joylashtirilgan

noto`g`ri raqamlangan

9. C_8H_{18} tarkibli alkanning bir vaqtning o`zida ham birlamchi, ham ikkilamchi, ham uchlamchi, ham to`rtlamchi uglerod atomlarini saqlagan izomerlari soni nechta?

Uchta

to`rtta

oltita

beshta

10. *n*-Butanning gosh-konformatsiyalarida $\text{C}_2\text{—C}_3$ bog` atrofida aylanish burchagi (ikki qirrali burchak) necha gradusga teng?

60°

120°

0°

180°

1. Quyidagi formulalar orasidan bir xil (faqat yozilishi bilangina farq qiladigan)lari bormi? 1) $\text{CH}_2\text{C}(\text{CH}_3)\text{CH}_2\text{CH}_3$; 2) $\text{CH}_3\text{CH}(\text{CH}_3)_2$; 3) $\text{CH}_2\text{C}(\text{CH}_3)\text{CH}_2\text{CH}_3$;

4. $\text{CH}_3\text{CHCH}_2\text{CH}_2\text{CH}_3$

1 va 3 bir xil

bir xillari yo`q

1 va 4 bir xil

2 va 4 bir xil

2. $(\text{CH}_3)_3\text{C}-\text{CH}_2-\text{CH}=\text{CH}_2$ tuzilishli uglevodorodni ratsional nomenklaturaga binoan nomlang.

Neopentiletilen

Uchlamchipentiletilen

2,2-dimetil-4-penten

4,4-dimetil-1-penten

3. $(\text{CH}_3)_2\text{CH}-\text{CH}=\text{CH}-\text{CH}_2-\text{C}(\text{CH}_3)_3$ tuzilishli uglevodorodni sistemik nomenklaturaga binoan nomlang.

2,2,6-trimetil-3-gepten

Izopropilizopentiletilen

Izopropilpentiletilen

2,2,6-trimetil-4-gepten

4. C_5H_9 tarkibli bir valentli alkenil radikalning nechta izomeri bor?

15 ta

12 ta

11 ta

10 ta

5. Alkenlarning qaysi biri geometrik izomerlar ko`rinishida mavjud bo`lishi mumkin?

simm-diizopropiletilen

3-etil-3-gepten

3,4-dietil-3-geksen

2-metil-2-penten

6. 2-metil-2-penten olish uchun qaysi digalogenalkanni rux kukuni bilan qizdirish kerak?

2,3-dibrom-2-metilpentan

2,3-dibrom-3-metilpentan

2,3-dibrom-4-metilpentan

2,4-dibrom-2-metilpentan

7. Karbonilli birikmalarga ilid $(\text{C}_6\text{H}_5)_3\text{P}=\text{CRR}^1$ ta'sir ettirib, alkenlarni sintezlash kimning reaksiyasi deb yuritiladi?

G. Vittig

A.N. Nesmeyanov

G. Vudvord

P. Karrer

8. O'zgarishlarni amalga oshiring. Oxirgi mahsulotni nomlang:



penten-2

pentanol-2

1-brompentanol-2

pentanol-1

9. Tuzilishi noma'lum alkenni xromli aralashma bilan oksidlaganda *n*-moy kislota C_3H_7COOH va karbonat anhidrid hosil bo'ldi. Oksidlangan alkenni nomlang.

1-penten

2-metil-1-penten

2-penten

2-metil-2-buten

10. Alkenlarning IQ-spektrlarida $C=C$ va $C_{sp^2}-H$ bog'larining valent tebranishlari qaysi sohalarda kuzatiladi?

$\nu_{C=C}$ 1620-1680 cm^{-1} va ν_{CH} 3010-3095 cm^{-1}

ν_{C-C} 1780-1795 cm^{-1} va ν_{CH} 3180-3195 cm^{-1}

$\nu_{C=C}$ 1700-1750 cm^{-1} va ν_{CH} 3120-3250 cm^{-1}

$\nu_{C=C}$ 1820-1835 cm^{-1} va ν_{CH} 3250-3272 cm^{-1}

1. Alkinlar molekulasidagi $-C\equiv C-$ bog' uzunligi va valent burchagi nechaga teng?

0,120 nm, 180°

0,154 nm, $109^\circ 28'$

0,140 nm, 120°

0,134 nm, 120°

2. Atsetilen molekulasi qanday geometrik shaklga ega?

Chiziqsimon

Yassi

Piramidal

Tetraedrik

3. C_6H_{10} tarkibli alkinning nechta izomeri bor?

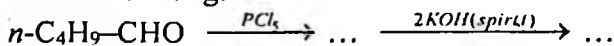
Yettita

Oltita

Beshta

Sakkizta

4. Quyidagi reaksiyalarning oxirgi mahsuloti hisoblangan alkinni nomlang:



1-pentin

3-metil-1-butin

2-pentin

2-metil-3-butin

5. IQ-spektrlarda uch bog' qaysi sohada kuzatiladi?

2300-2100 cm^{-1}

2050-2000 cm^{-1}

2400-2450 cm^{-1}

2800-2600 cm^{-1}

6. R-C \equiv CH tipidagi 1-alkinlar PMR-spektrida \equiv CH protoni qaysi maydonda signal beradi?

δ 2,3-3,0 m.h.

δ 5,5-5,9 m.h.

δ 3,5-4,4 m.h.

δ 1,3-1,5 m.h.

7. C₄H₆ tarkibli uglevodorodning IQ-spektrida 3305 va 2125 cm^{-1} sohalarda intensiv valent tebranishlari bor. Shu birikmaning tuzilishini aniqlang.

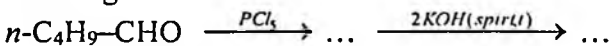
butin-1

butin-2

butadiyen-1,2

butadiyen-1,3

8. Quyidagi reaksiyalarning oxirgi mahsuloti hisoblangan alkinni nomlang:



1-pentin

3-metil-1-butin

2-pentin

2-metil-3-butin

9. Alkinlar molekulasidagi -C \equiv C- bog' uzunligi va valent burchagi nechaga teng?

0,120 nm, 180°

0,154 nm, 109°28'

0,140 nm, 120°

0,134 nm, 120°

10. Konformatsion izomerlar yoki konformerlar izomeriyaning qaysi turiga kiradi?

aylanma izomeriya

geometrik izomeriya

uglerod skeleti izomeriyasi

metameriya

1. Alkadiyenlar gomologik qatoriga umumiy formulalarning qaysi biri to'g'ri keladi?

C_nH_{2n-2}

C_nH_{2n}

C_nH_{2n-4}

C_nH_{2n+2}

2. 1,3-butadiyen molekulasidagi C_1-C_2 va C_3-C_4 bog'lar uzunligi necha nm ga teng?

0,136 nm

0,154 nm

0,134 nm

0,120 nm

3. 1,3-butadiyen molekulasidagi C_2-C_3 bog' uzunligi necha nm ga teng?

0,146 nm

0,139 nm

0,142 nm

0,154 nm

4. 2,4-geksadiyen izomerlaridan eng barqarori, suyuqlanish va qaynash harorati eng yuqori, dipol momenti esa kichik bo'lgani qaysi?

trans-trans-2,4-geksadiyen

sis-sis-2,4-geksadiyen

trans-sis-2,4-geksadiyen

sis-trans-2,4-geksadiyen

5. 3-metil-3-etil-1,4-geksadiyenni ratsional nomenklaturaga binoan nomlang.

Metiletilvinilpropenilmetan

Metiletilvinilpropargilmetan

Vinilpropenilmetiletilmetan

Metilviniletilpropenilmetan

6. Vyurs reaksiyasidan foydalanib 2,9-dimetil-3,7-dekadiyenni sintezlash uchun qaysi bromli hosilani natriy bilan qizdirish kerak?

1-brom-4-metil-2-penten

5-brom-2-metil-2-penten

5-brom-2-metil-1-penten

1-brom-4-metil-1-penten

7. 1-brom-3-metil-2-butenni o'yuvchi kaliyning spirdagi eritmasi bilan qizdirilganda qanday alkadiyen hosil bo'ladi?

nosimm-dimetilallen

simm-dimetilallen

2-buten

1-buten

8. 2,3-dimetil-1,3-butadiyenni sintezlash uchun qanday glykolni degidratlash kerak?

2,3-dimetil-2,3-butandiol

2,2-dimetil-1,3-butandiol

2,3-dimetil-1,2-butandiol

2,3-dimetil-1,3-butandiol

9. 1,3-butadiyen molekulasining rezonans yoki mezomeriya energiyasi necha kJ/molga teng?

14,7 kJ/mol

60,4 kJ/mol

28,2 kJ/mol

150,8 kJ/mol

10. 2,4-geksadiyenning nechta geometrik izomerlari bo'lishi mumkin?

Uchta

Ikkita

To'rtta

Beshta

1. $\text{CH}_2=\text{C}(\text{C}_2\text{H}_5)-\text{CHCl}-\text{CH}(\text{CH}_3)-\text{C}\equiv\text{C}-\text{CH}_3$ tuzilishli birikmani sistematik nomenklaturaga ko'ra nomlang.

4-metil-3-xlor-2-etil-1-gepten-5-in

3-etil-4-metil-3-xlor-1-gepten-5-in

4-metil-5-xlor-6-etil-6-gepten-2-in

4-metil-6-etil-5-xlor-6-gepten-2-in

2. Quyidagi reaksiya natijasida qanday monoxloralkan hosil bo`ladi? $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_3 + \text{Cl}_2 \xrightarrow{250-400^\circ\text{C}} \dots$
 n-butil xlorid va ikkilamchi butil xlorid aralashmasi
 faqat n-butilxlorid
 faqat ikkilamchi butil xlorid
 uchlamchi butil xlorid va ikkilamchi butil xlorid aralashmasi

3. Keltirilgan birikmalarning qaysi biri $\text{S}_{\text{N}}1$ reaksiyalariga eng oson kirishadi?

- 2-brom-2-metilbutan
- 2-brompentan
- 1-brompentan
- Metilbromid

4. Alkil galogenidlardan qaysi birlari nukleofil o`rin olish reaksiyalariga oson kirishadi?

- alkil yodidlar
- alkil fluoridlar
- alkil bromidlar
- alkil xloridlar

5. Izobutilen $\xrightarrow{\text{HCl}} \dots \xrightarrow{\text{NaOH (suvdagi eritmas)}} \dots$

Reaksiyalar oxirgi mahsulotini nomlang:

- 2-metil-2-propanol
- 2-butanol
- 2-metil-1-propanol
- 1-butanol

1. $\text{CCl}_3\text{CH}_2\text{CH}=\text{C}(\text{CH}_3)\text{CH}_2\text{Cl}$ tuzilishli birikmani sistematik nomenklaturaga ko`ra nomlang.

- 2-metil-1,5,5,5-tetraxlor-2-penten
- 1,5,5,5-tetraxlor-2-metil-2-penten
- 4-metil-1,1,1,5-tetraxlor-3-penten
- 1,1,1,5-tetraxlor-4-metil-3-penten

2. $\text{CF}_3\text{-CF}_2\text{-CF}_2\text{-CF}_3$ tuzilishli birikmani sistematik nomenklaturaga binoan nomlang.

- Perftorbutan
- Metforilpropforil
- Dietforil
- Dekastorbutan

3. 1,4-dibrom-4-metilpentan o'yuvchi kaliyning spirtidagi eritmasi bilan qizdirilganda asosiy mahsulot sifatida qanday monobromalken hosil bo'ladi?

5-brom-2-metil-2-penten

4-brom-4-metil-1-penten

5-brom-2-metil-1-penten

4-brom-4-metil-2-penten

4. 2,4-dibrom-4-metilgeksanni degidrogalogenlaganda asosiy mahsulot sifatida qanday modda hosil bo'ladi?

3-metil-2,4-geksadiyen

4-metil-1,4-geksadiyen

3-metil-2,3-geksadiyen

4-metil-1,3-geksadiyen

5. C_5H_9Br tarkibli galogenalkenning nechta izomeri bor?

3 ta

2 ta

4 ta

1 ta

1. $C_5H_{11}OH$ tarkibli izomer spirtlarning soni (stereoizomerlarini hisobga olmaganda) nechta?

Sakkizta

To'qqizta

O'nta

Yettita

2. $C_5H_{11}OH$ tarkibli izomer ikkilamchi spirtlarning soni (stereoizomerlarini hisobga olmaganda) nechta?

Uchta

Ikkita

Beshta

To'rtta

3. Spirtlarning qaysi birida xiral markaz (asimmetrik uglerod atomi) bor?

$(CH_3)_2CHCH(OH)CH_3$

$(CH_3)_2C(OH)CH_2CH_3$

$(CH_3)_2CHCH_2CH_2OH$

$CH_2OHC(CH_3)_3$

4. Keltirilgan spirtlarning qaysi birida xiral markaz bor?

2-metil-2-butanol

3-pentanol

2-pentanol

2,4-dimetil-3-pentanol

5. $(\text{CH}_3)_3\text{CCH}_2\text{CH}(\text{OH})\text{CH}_3$ tuzilishli spirtni sistematik nomenklaturaga binoan nomlang.

4,4-dimetil-2-pentanol

Metilneopentilkarbinol

Metilneopentilmetanol

2,2-dimetil-4-pentanol

6. $\text{CH}_2=\text{C}(\text{CH}_3)\text{CH}_2\text{OH}$ tuzilishli spirtni sistematik nomenklaturaga ko`ra nomlang.

2-metil-2-propen-1-ol

Izopropenilkarbinol

2-metil-1-propen-3-ol

Metilmetiloletilen

7. $\text{HC}\equiv\text{C}-\text{CH}_2-\text{CH}_2\text{OH}$ tuzilishli spirtni sistematik nomenklaturaga bo`yicha nomlang.

3-butin-1-ol

1-butin-4-ol

Etiniletil spirt

Propargilkarbinol

8. $(\text{CH}_3)_2\text{CHCH}_2\text{CHO} \xrightarrow{\text{H}_2 / \text{Ni}} \dots$ Reaksiya mahsulotini nomlang.

3-metil-1-butanol

3-metil-2-butanol

2-metil-1-butanol

2-metil-2-butanol

9. $\text{CH}_3\text{CH}_2\text{COCH}(\text{CH}_3)_2 \xrightarrow{\text{C}_2\text{H}_5\text{OH} + \text{Na}} \dots$
Reaksiya mahsulotini nomlang:

2-metil-3-pentanol

4-metil-3-pentanol

2-metil-1-pentanol

2-metil-2-pentanol

10. 1-propanol sovuqda kons. H_2SO_4 bilan reaksiyaga kirishganda qanday birikma hosil bo`ladi?

dipropil efir

dipropilsulfat

propilen
propilsulfat kislota

1. . . . sanoatda etilen oksidini sulfat kislotaning suvdagi 0,5 % li eritmasi bilan qizdirib olinadi.

Etilinglikol

Etanol

Etanon

Etandiol

2. Qaysi moddalar alkanollar uchun xos bo'lgan deyarli barcha reaksiyalarga kirishadi.

Gilikollar

Benzol

Stirollar

Spirtlar

3. 114-115°C da qaynaydigan, suvda eriydigan suyuqlik bo'lib, atsetilen va birlamchi spirt xossalarini namoyon qiladi. Quyida keltirilgan moddani toping.

Propargil spirti

Propil spirt

Izopropil spirt

Atseton

4. -23°C da va etilmetil efiri 10,8°C da qaynaydigan odatdagi sharoitda gaz modda. Qaysi modda haqida fikr yuritilmoqda?

Dimetilefir

Dietilefir

Metiletilefir

Butanol

5. Dialkil efirlar alkanollar singari kuchsiz asos xossalariga ega bo'lib, kuchli kislotalar (masalan, H₂SO₄, HClO₄ va HBr) ta'sirida . . . hosil qiladi.

Beqaror oksoniy tuzlar

Sulfoefirlar

Sulfokislotalar

NaOH

6. Qaysi efir 67,5°C da qaynaydigan suyuqlik. U izopropil spirtni BF₃ ishtirokida propen bilan alkillab olinadi.

Diizopropil efir

Metiletilefir

Metilizopropilefir

Kraunefirlari

7. Metiluchlamchibutil efir necha °C da qaynaydigan suyuqlik.

54

58

70

60

8. *Dibutil efir* 142°C da qaynaydigan suyuqlik, nima maqsadda ishlatiladi?

Erituvchi sifatida

Oziq ovqat sanoatida

Neftni tozlash uchun

Yog` sintez qilishda

1. $(\text{CH}_3)_2\text{CHCH}_2\text{CHO}$ tuzilishli aldegidni tarixiy nomenklaturaga ko`ra nomini aniqlang.

izovalerian aldegid

2-metilbutanal

3-metil-1-butanal

izobutil aldegid

2. 2,4-dimetil-3-pentanolni katalizator (Cu yoki Zn) ishtirokida 300-6000C da havo bilan oksidlaganda qanday oksobirikma hosil bo`ladi?

2,4-dimetil-3-pentanon

2,3-dimetilpentanal

3,4-dimetil-2-pentanon

2,2-dimetil-3-pentanon

3. 3,3-dimetil-1-pentanolni xromli aralashma bilan oksidlaganda qanday oksobirikma hosil bo`ladi?

3,3-dimetilpentanal

3,3-dimetil-2-pentanon

2,4-dimetilpentanal

2,2-dimetilpentanal

4. 3-etil-3-pentanolni KMnO_4 va H_2SO_4 bilan oksidlaganda qanday oksobirikma(lar) hosil bo`ladi?

sirka kislota va dietilketon

faqat dietilsirka kislota

faqat sirka kislota

faqat dietilketon

5. Chumoli va moy kislotalar kalsiyli tuzlarining aralashmasi piroliz qilinganda qaysi oksobirikma hosil bo`ladi.

moy aldegid

metiletiketona

metilpropilketona

izomoy aldegid

6. Propion va valerian kislotalar kalsiyli tuzlarining aralashmasi piroliz qilinganda qanday oksobirikma(lar) hosil bo`ladi?

dietiketona, etilbutiketona va dibutiketona

faqat dietiketona

dietiketona va dibutiketona

faqat dibutiketona

7. Chumoli va moy kislotalar bug`ining aralashmasi 3000Cda ThO₂ ustidan o`tkazilganda hosil bo`ladigan oksobirikmani nomlang.

Moy aldegid

Propion aldegid

Izomoy aldegid.

Metiletiketona

8. 1,1-dibrom-2,2-dimetilpropanni gidrolizlanishidan qanday oksobirikma hosil bo`ladi?

Trimetilsirka aldegid

Izovalerian aldegid.

Valerian aldegid

Metilizopropilketona

9. 3-Metil-2geksanonni sintezlash uchun qaysi digalogenalkanni gidrolizlash kerak.

3-metil -2,2-dixlorgeksan

2-metil-1,1-dixlorgeksan

4-metil-1,1-dixlorgeksan

3-metil -1,1-dixlorgeksan

10. Propion kislota 700-800C da AlPO₄ ishtirokida piroliz qilinganda qanday oksobirikma hosil bo`ladi?

metilketon $\text{CH}_3\text{-CH=C=O}$

keton $\text{CH}_2\text{=C=O}$

propion aldegid

dietiketona

1. Oksobirikmalarning qaysi biri AN reaksiyalariga eng qiyin kirishadi?

diuchlamchibutilketon

etanal

atseton

chumoli aldegid

2. Birikmalarning qaysi biri AN reaksiyalariga eng oson kirishadi?

xloral (trixloratsetaldegid)

izomoy aldegid

pentanon-3

metanal

3. Birikmalarning qaysi biri natriy gidrosulfit (bisulfit) bilan reaksiyaga kirishmaydi?

2,2,4-trimetilpentanon-3

propanal

atseton

izomoy aldegid

4. Reaksiyalarining oxirgi mahsulotini nomlang: C_2H_5-CHO ...

...

propannitril

atsetonitril

propilen

propan

5. Oksobirikmalarning qaysi biri kondensatsialanish reaksiyalariga eng oson kirishadi?

sirka aldegid

metiletilketon

atseton

dietilketon

6. Oksidlanganda atseton va izomoy kislota hosil qiladigan hamda natriy gidrosulfit bilan reaksiyaga kirishmaydigan $C_7H_{14}O$ tarkibli ketonning nomini aniqlang.

diizopropilketon

etilizobutilketon

etilikkilamchi butil keton

dipropilketon

7. Quruq gazsimon formaldegidning temir karbonil ishtirokida polimerlanishidan hosil bo`ladigan polimer $(-CH_2-O-)_n$ ning nomini toping.

poliformaldegid
metaformaldegid
polioksan
paraformaldegid

8. Keten $\text{CH}_2=\text{C}=\text{O}$ ni olish uchun qaysi moddani $700-800^\circ\text{C}$ da AlPO_4 ishtirokida piroliz qilish kerak?

atsetonni
propion aldegidni
metiletilketonni
sirka aldegidni

9. Akrolein $\text{CH}_2=\text{CH}-\text{CHO}$ sanoatda qanday olinadi?
propenni CuO ishtirokida $300-400^\circ\text{C}$ da havo bilan oksidlab
allil spirtni oksidlab

3,3-dixlor-1-propenni gidrolizlab
glitserinni suvsiz KHSO_4 bilan qizdirib

10. 1,2-etandiolni mis ishtirokida qizdirib, katalitik
degidrogenlash bilan qanday birikma olinadi?

glioksal
etilenoksid
dietilenglikol
1,4-dioksan

1. Moy kislotalaridan qaysi biri nisbatan eng kuchsiz?

n-moy kislota
 α -xlormoy kislota
 γ -xlormoy kislota
 β -xlormoy kislota

2. Birikmalarning qaysi biri nisbatan eng oson (past haroratda)
termik dekarboksillanadi?

siansirka kislota
sirka kislota
propion kislota
vinilsirka kislota

3. 2-metil-3-buten kislotaning termik dekarboksillanishidan
qanday birikma (lar) hosil bo'ladi?

sis- va trans-buten-2
buten-1
sis-buten-2
trans-buten-2

4. Karbon kislotalardan qaysi biri nisbatan eng kuchli?
 chumoli kislota
 propion kislota
 sirka kislota
 izomoy kislota
5. 1,1,1-trixlorpropaning sulfat kislota ishtirokida gidrolizlanishidan qanday birikma hosil bo`ladi?
 propion kislota
 1,1,1-trigidroksiopropan
 2-gidrooksi-1-xloropropan
 1-gidrooksi-2-xloropropan
6. $\text{H}-\text{C}\equiv\text{C}-\text{COOH}$ tuzilishli moddani sistematik nomenklatura bo`yicha nomini aniqlang.
 propin kislota
 etinilkarbon kislota
 atsetilenkarbon kislota
 propil kislota
7. $\text{CH}_2=\text{C}(\text{CH}_3)-\text{COOH}$ tuzilishli birikmani sistematik nomenklaturaga binoan nomlang.
 2-metilpropen kislota
 α -metiletilenkarbon kislota
 propenkarbon-2-kislota
 metakril kislota
8. $\text{CH}_3-\text{CH}(\text{CH}_3)-\text{CH}(\text{CH}_3)-\text{CH}_2-\text{COOH}$ tuzilishli moddani sistematik nomenklaturaga binoan nomini ko`rsating.
 3,4- dimetilpentan kislota
 β,γ -dimetilvalerian kislota
 2,3-dimetilbutankarbon kislota
 2,3-dimetilpentan kislota
9. $\text{CH}_3-\text{C}(\text{CH}_3)_2-\text{CH}_2-\text{CH}(\text{CH}_3)-\text{COOH}$ tuzilishli birikmani ratsional nomenklaturaga binoan nomlang.
 metilneopentilsirka kislota
 2,4,4- trimetilpentan kislota
 2,2,4- trimetilvalerian kislota
 2- metilneogeptan kislota
10. Karbon kislota molekulasidagi gidroksil guruhining kislorodi qanday effekt(lar) namoyon qiladi?

-I va +M-effekt

faqat -M-effekt

faqat -I-effekt

faqat +M-effekt

1. $n\text{-C}_3\text{H}_7\text{CONH}_2$ tuzilishli formula qaysi birikmaga tegishli?
butanamid (butanoilamid)

n-propilamidga

propanamidga

propionilamidga

2. $\text{CH}_3\text{CH}_2\text{C}(\text{O})\text{NHNH}_2$ tegishli formula qaysi birikmaga tegishli?

propionilgidrazidga

propilgidroksam kislotaga

propilgidrazidga

etilgidroksam kislotaga

3. Propanoilxloridni sintezlash uchun qaysi karbon kislotaga tionil xlorid ta'sir ettirish kerak?

propion kislotaga

moy kislotaga

butan kislotaga

etan kislotaga

4. $\text{CH}_3\text{COOH} \xrightarrow{\text{AlPQ}_3(700^\circ\text{C})} \dots \xrightarrow{\text{CH}_3\text{COOH}} \dots$

Reaksiyalar oxirgi mahsulotini nomlang.

sirka anhidrid

metan-propan anhidrid

metan anhidrid

propan anhidrid

5. Karbon kislotalarga diazometan ta'sir ettirganda qanday organik birikmalar hosil qiladi?

murakkab efirlar

kislota gidrazidlari

kislota azidlar

kislota amidlari

6. Sanoatda karbon kislota va ammiak aralashmasini 300-4000C da Al_2O_3 ustidan o'tkazib qanday hosila olinadi?

nitril

izonitril

kislota azidi

amid

7. Birlamchi aminlarga xloroform va ishqor ta'sirib ettirib karbon kislotalarning qaysi hosilalari olinadi?

izonitrillar

kislota amidlar

kislota gidrazidlar

nitrillar

8. Atsetil xlorid Pd-BaSO₄ (zaharlangan katalizator) ishtirokida vodorod bilan reaksiyaga kirishganda qanday organik modda hosil bo'ladi?

sirka aldegid

α -xlorsirka aldegid

etil spirti

1-xloretanol

9. Quyidagi reaksiyani kim kashf qilgan? $R-COOH + HN_3$



K. Shmidt

R. Shmitt

G. Shiman

M. Shtoll

10. Gidroksam kislotalar Lyuis kislotalari, P₂O₅ yoki sirka angidrid ishtirokida birlamchi aminlarga qayta guruhlanadi: $R-CONHOH \xrightarrow{H_2SO_4} R-NH_2 + CO_2$

Bu kimning qayta guruhlanishi?

V. Lossen

L. Lorents

V. Latimer

C. Lang

1. C₅H₈O₄ tarkibli dikarbon kislotalarning nechta strukturaviy izomeri bor?

to'rtta

uchta

beshta

oltita

2. β -metiladipin kislotalari sistematik nomenklaturaga binoan nomlang?

3-metilgeksan dikislota

3-metilpentan dikislota

2-metilgeksan dikislota

3-metilgeptan dikislota

3. $\text{HOOC}-(\text{CH}_2)_6-\text{COOH}$ tuzilishli dikarbon kislotaning tarixiy (trivial) nomini aniqlang?

po`kak (suberin) kislota

azelain kislota

pimelin kislota

sebatsin kislota

4. $\text{NC}-\text{CH}(\text{CH}_3)-\text{CH}_2-\text{CN}$ tuzilishli birikmani gidroliz qilganda qanday dikarbon kislota hosil bo`ladi?

metilqahrabo kislota

metilglutar kislota

glutar kislota

metilmalon kislota

5. $\text{C}_6\text{H}_6 \xrightarrow{\text{O}_2, \text{Pt}, (400-500^\circ\text{C})} \text{A} \xrightarrow{\text{H}_2\text{O}} \text{B} \xrightarrow{\text{H}_2, \text{Pt}} \text{C}$ Reaksiyalar oxirgi

(C) mahsulotini nomlang.

qahrabo kislota

malon kislota

glutar kislota

metilmalon kislota

6. Sis-buten-2 ni katalizator ishtirokida kislorod bilan oksidlaganda qanday dikarbon kislota hosil bo`ladi?

malein kislota

qahrabo kislota

fumar kislota

metilmalon kislota

7. Shovul kislota sanoatda qaysi moddadan olinadi?

natriy formiatdan

atsetilendan

etilendan

ditsiandan

8. Malon kislota sanoatda qaysi moddadan olinadi?

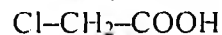
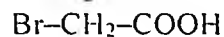
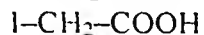
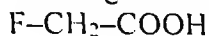
xlorsirka kislotadan

propilendan

metilatsetilendan

natriy atsetatdan

1. Galogen sirka kislotalaridan qaysi biri nisbatan eng kuchli?



2. Dipropilketonni olish uchun qaysi karbon kislotalarning kalsiyli tuzini piroliz qilish kerak?

n-moy kislotaning

propion kislotaning

izomoy kislotaning

chumoli va propion kislotaning

3. Allil spirtning YaMR-spektrida nechta signal bo'lishi kerak?

beshta

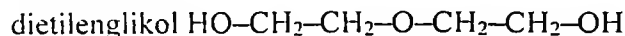
to'rtta

oltita

yettita

4. Etilenglikol kons. H_2SO_4 ishtirokida haydalganda (A.E. Favorskiy, 1906 y.) qanday birikma hosil bo'ladi?

1,4-dioksan



1,3-dioksan

1,2-dioksan

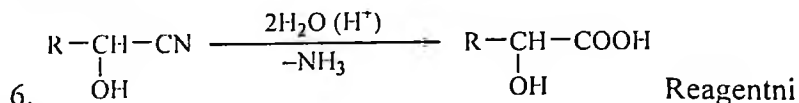
5. $(\text{COOH})_n-\text{R}-(\text{OH})_m$ tarkibli moddalar $-\text{OH}$ va $-\text{COOH}$ funksional guruhlarni saqlaydi. Bu qaysi organik birikmalar bo'lishi mumkin?

Gidrosikislotalar

Karbonkislotalar

Dikarbon kislotalar

Sovunlar



aniqlang.

Siangidrin

Mochevina

Olma kislota

Sianid tuzi

1. . . . molekulasida karboksil va karbonil guruhlarini tutgan aralash funksiyali birikmalardir.

Oksokislotalar

Gidrosikislotalar

Yog'lar

Efirlar

2. α -Ketopropion kislota uzum kislotani piroliz qilib olingani uchun qanday nom berilgan?

Pirouzum kislota

Olma kislota

Vino kislota

Limon kislota

3. 98°C da suyuqlanadigan gidrat holida mavjud bo'ladigan yagona α -aldegidkislota. Quyidagi fikr qaysi moddaga tegishli?

Gliksil(gliksal) kislota

Vino kislota

Chumoli kislota .

Olma kislota

4. Qaysi Oksokislota suvda yaxshi eriydigan, beqaror siropsimon suyuqlik bo'lib, sal qizdirilganda atseton va CO_2 ga parchalanadi (Uning etil efiri (atsetosirka efir) nazariy va amaliy jihatdan katta ahamiyatga ega)?

Atsetosirka kislota

Pirouzum kislota

Gliksil(gliksal) kislota

Vino kislota

5. . . . aldegid va ketonning rux ishtirokida α -galogenefir bilan reaksiyasi natijasida β -gidrosikarbon kislotasining olinishi.

Reformatskiy reaksiyasi

Klayzen reaksiyasi

Dyuma reaksiyasi

Tautomerlar

6. Radikal o'rin olish reaksiyalari qanday belgilanadi?

SR

AN

ER

SN

7. Qutbli molekular orasidagi dipol-dipolli o'zaro ta'sirlashuvlarning energiyasi necha kkal/mol dan oshmaydi?

1

4

3

2

8. Quyidagi o'rinbosarlardan qaysi biri nisbatan kuchsiz manfiy induktiv effekt (–I-effekt) namoyon qiladi?

$\text{CH}_2=\text{CH}-$

$-\text{OH}$

C_6H_5-

$-\text{NH}_2$

9. Uglerod atomida vakant p-orbitali bor zaryadlangan zarracha qanday nomlanadi?

karbkation

erkin radikal

kation-radikal

karbanion

10. Uglerod atomida umumlashmagan elektron jufti bor zaryadlangan zarracha qanday nomlanadi?

karbanion

erkin radikal

anion-radikal

karbkation

1. 1899-yilda fransuz olimi sintezlaridagi Zn o'rniga Mg elementini ishlatib, yangi yutuqlarga erishdi.

P. Barbe, A.M. Zaytsev

C. Kurnakov

G. Devi

D. Mendeleyev

2. $\text{C}_6\text{H}_5\text{Br} + \text{CH}_3\text{Li} \rightarrow \dots$ Reaksiya natijasida qanday modda(lar) osil bo'ladi?

$\text{C}_6\text{H}_5\text{Li}$ va CH_3Br

Benzol va Li

Metil spirt va Li

CH_3Br va LiBr

3. Qaysi metallorganik birikma bilan dorilangan dukkakli o'simliklar urug'i ekilgandan keyin har xil kasalliklarga chalinmaydi va unib chiqqan o'simlikning o'sishi tezlashadi?

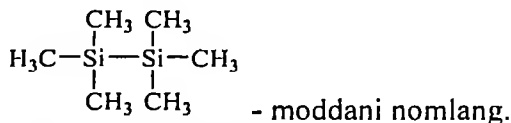
Etilsimob xloridi

Metilsimobxlorid

Etilmagniy organik brikma

Posfororganik birikmalar

4.



Geksametildisilan (GMDS)

Dekametiltetrasilan

Silan

Karborun

5. $\text{HSiCl}_3 + \text{CH}_2 = \text{CH}_2 \rightarrow \dots$ Reaksiya natijasida hosil bo'lgan modda(lar) ni aniqlang.

$\text{C}_2\text{H}_5\text{SiCl}_3$

$(\text{CH}_3)_2\text{SiH}_2$

$\text{SiCl}_2 + \text{etan}$

$\text{HSiCl}_3 + \text{suv}$

6. Grinyar reaktivi formulasini ko'rsating.

R-Mg Cl

POCl_3

R_3PI_2

$\text{R}_3\text{P=O}$:

7. Atom orbitallarining gibridlanishi konsepsiyasini qachon va qaysi olim ilgari surdi?

1931-yilda L. Poling

1936-yilda J.D. Kemp

1930-yilda E. Xyukkel

1936-yilda K.C. Pittser

8. O`rin olish (almashinish) reaksiyalari qaysi harf bilan belgilanadi?

S

R

E

A yoki Ad

9. Ajarlash reaksiyalari qaysi harf bilan belgilanadi?

E

S

R

A yoki Ad

10. Qayta guruhlanishlar qanday harf bilan belgilanadi?

R

S

A yoki Ad

E

1. Qaysi organik birikmalar $ArSO_3H$ umumiy formulaga ega ?

Aromatik sulfokislotalar

Aromatik sulfoangidridlar

Geterosiklik birikmalar

Aromatik sulfooksidlar

2. . . . organik birikma molekulasiga C-S bog'ini hosil qilish bilan sulfoguruh (sulfon guruhi) $-SO_3H$ yoki $-SO_2OH$ ni kiritish reaksiyasi.

Sulfolash

Oksidlash

Nitrolash

Galogenlash

3. C_2H_5-SH modda nomini aniqlang.

Merkaptan

Kaprolaktam

Anilin

Guttapercha

4. . . . vodorod sulfidning har ikkala vodorod atomi alkil guruhlariga almashingan hosilasi.

Sulfidlar

Silidsitlar

Tiofenlar

Tiokislotalar

5. . . . vodorod sulfidning bitta vodorod atomi alkil guruhiga almashingan hosilasi.

Tiollar

Silidsitlar

Tiofenlar

Tiokislotalar

6. Qachon va qaysi olim(lar) uglerodning to`rt valentligini aniqladilar?

1857-yilda A.Kekule va A. Kolbe

1872-yilda Y. Vant-Goff

1868-yilda J. Le Bel

1861-yilda A.M. Butlerov va V.V. Markovnikov

7. Kimyoviy tuzilish nazariyasini qachon va kim yaratdi?

1861-yilda A.M. Butlerov

1845-yilda N.N. Zinin

1858-yilda A. Kekule

1854-yilda M. Bertlo

8. Fanga izomeriya atamasini qaysi olim kiritgan?

Ya. Berselius

A.M. Butlerov

Y. Vant-Goff

J. Le Bel

9. To`yingan uglerod atomining fazoviy konfiguratsiyasi (o`rinbosarlarning tetraedrik joylashishi) to`g`risidagi gipotezani qachon va qaysi olim(lar) ilgari surdilar?

1872-yilda A.M. Zaytsev

1869-yilda V.V. Markovnikov

1843-yilda N.N. Zinin va A. Kolbe

1874-yilda Y. Vant-Goff va J. Le Bel

10. Metilgidroksoniy – ion $\text{H}_3\text{C}^{\oplus}\text{OH}_2$ da kislorod atomi zaryadi (Z_o) ni hisoblang.

+1

+2

-2

0

11. Valent elektron juftlarining itarilish nazariyasini qachon va qaysi olim yaratdi?

1972-yilda R. Gillespi

1982-yilda N.D. Zelinskiy

1992-yilda R. Vudvord

1962-yilda A.N. Nesmeyanov

1. $\text{CH}_3\text{CH}_2\text{C}(\text{O})\text{NHNH}_2$ tegishli formula qaysi birikmaga tegishli?

- propionilgidrazidga
- propilgidroksam kislota
- propilgidrazidga
- etilgidroksam kislota

2. $n\text{-C}_3\text{H}_7\text{CONH}_2$ tuzilishli formula qaysi birikmaga tegishli?

- butanamid (butanoilamid)ga
- n-propilamidga
- propanamidga
- propionilamidga

3. Birikmalardan qaysi biri gidrolizlanish reaksiyasiga nisbatan eng oson kirishadi?

- $\text{CH}_3\text{-COCl}$
- $\text{CH}_3\text{-CONH}_2$
- $\text{CH}_3\text{-C}\equiv\text{N}$
- $\text{CH}_3\text{-COOCH}_3$

4. $\text{R}_2\text{C}=\text{N}-\text{N}=\text{CR}_2$ umumiy formula qaysi birikmaga tegishli?

- ketazinlarga
- ketoksimlarga
- aldazinlarga
- aldoksimlarga

5. Oksobirikmalarning qaysi biri A_N reaksiyalariga eng qiyin kirishadi?

- diuchlamchibutiketon
- etanal
- atseton
- chumoli aldegid

6. Qaysi olim birinchi bo`lib shovul kislota va mochevinani noorganik moddalardan sintez qilgan?

- F. Vyoler
- N. Zinin
- A. Butlerov
- E. Mitcherlix

7. Tiplar nazariyasini qachon va qaysi olim yaratgan?

- 1851-yilda Sh. Jerar
- 1836-yilda E. Devi

1825-yilda M. Faradey

1847-yilda J. Le Bel

8. Organik moddalar analizining asoschisi kim?

Yu. Libix

Y. Vant-Goff

N.D. Zelinskiy

V.V. Markovnikov

9. Organik birikmalarda azotni miqdoriy aniqlash usulini qaysi olim ishlab chiqqan?

J. Dyuma

G. Kolbe

R. Vudvord

R. Xofman

10. Organik molekulalardagi bog'larni chiziqchalar bilan belgilashni birinchi bo'lib qaysi olim taklif etgan?

A. Kuper 1858-yilda

A. Kolbe 1850-yilda

A. Bayer, 1854-yilda

A. Kekule 1848-yilda

1. Sikloalkanlardan qaysi birining halqasi tekis tuzilishga ega?

A) siklooktanning

B) siklogeksanning

C) siklopentanning

D) siklopropanning

10, 1, c. 131.; 26, 17-b.

2. Bitta CH_2 - guruhi uchun hisoblaganda qaysi birikmaning yonish issiqligi eng yuqori?

A) geksanning

B) siklopropanning

C) siklopentanning

D) siklogeksanning

3, c. 163.; 26, 18-b.

3. Bitta CH_2 - guruhiga to'g'ri keladigan yonish issiqligi qaysi sikloalkan uchun eng kam?

A) siklododekan

B) siklodekan

C) siklooktan

D) siklogeksan

21, c. 276.; 26, 18-b.

4. Siklopropanda C–C bog'lar orasidagi burchak necha gradusga teng?

A) 120°

B) $109^\circ 28'$

C) 106°

D) 90°

26, 17-18-b.

5. Siklogeksanning notekis tuzilganligi (kreslo va vanna shakllarida uchrashi) to'g'risidagi fikrni birinchi bo'lib kim, qachon fanga kiritgan?

- A) 1885-yilda A. Bayer
 B) 1890-yilda G. Zakse
 C) 1920-yilda E Mor
 D) 1930-yilda O. Xassel

6.

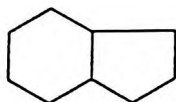


tuzilishli birikma qanday nomlanadi?

- A) spiro[3,5] nonan
 B) spiro[3,6] nonan
 C) bitsiklo[3,5] nonan
 D) bitsiklo[3,6,0] nonan

3, c. 160-161; 11, c. 204-206.

7.



tuzilishli birikmani nomlang.

- A) spiro[6,3] nonan
 B) bitsiklo[4,3,0] nonan
 C) bitsiklo[6,3] nonan
 D) bitsiklo[3,6,0] nonan

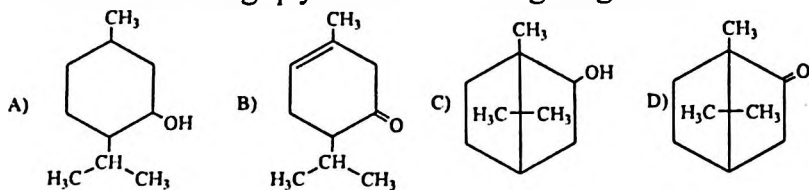
3, c. 160-161.; 11, c. 204-206.

8. Dekalin sistematik nomenklaturaga binoan qanday nomlanadi?

- A) spiro[4,4,2] dekan
 B) spiro[4,4,2] dekan
 C) bitsiklo[4,6] dekan
 D) bitsiklo[4,4,0] dekan

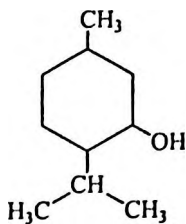
3, c. 160-161; 11, c. 204-206.

9. Formulalarning qaysi biri kamforaga tegishli?



18, 394-395-b.


10.



tuzilishli modda tarixiy (trivial) nomenklaturaga

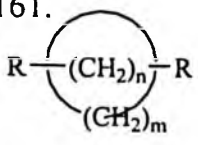
binoan qanday nomlanadi?

- A) mentan B) kamfora C) L-terpeniol D) mentol
3, c. 300; 18, 391-b.

11.  tuzilishli moddaning trivial nomini
aniqlang.

- A) Limolen B) Adamantan C) α -pinen D) β -pinen

3, c. 161.

12.  tuzilishli birikmalar qanday umumiy nom
bilan yuritiladi?

- A) rotaksanlar B) katenanlar
C) kamfenanlar D) terpenoidlar

11, c. 205; 22, c. 334

13. C_6H_{12} tarkibli sikloalkanning stereoizomerlarini hisobga
olmaganda nechta strukturaviy izomeri bor?

- A) 10 B) 11 C) 12 D) 13

6, 243- va 248-b.

14. Quyidagi birikmalarning qaysi biri geometrik izomerlar
holida uchraydi?

- A) bromsiklopentan B) 1,1-dibromsiklopentan
C) 1,1-dibromsiklogeksan D) 1,2-dixlorsiklopropan

6, 243- va 248-249-b; 26, 7-9-b.

15. Quyidagi birikmalarning qaysi biri ikkita enantiomer holida
mavjud bo'ladi?

- A) sis-siklobutandiol-1,2
B) trans-siklobutandiol-1,2
C) sis-siklogeksan -1,2 dikarbon kislota
D) sis-siklobutan -1,2 dikarbon kislota

6, 248-250-b; 15, c. 282-284; 26, 7-9-b.

16. Quyidagilarning qaysi biri mezo- birikma?

- A) bromsiklopentan B) 1,1-dibromsiklopentan
C) trans-siklobutandiol-1,2 D) sis-siklopentandiol-1,2

6, 249-250-b; 15, c. 282-284; 26, 8-9-b.

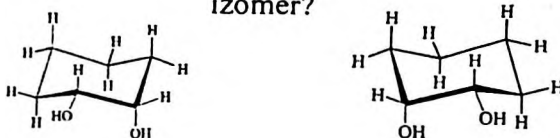
17. C_7H_{10} tarkibli, olti a'zoli, ikkita qo'sh bog'i bor o'zaro izomer birikmalarning soni nechta?

- A) 10 B) 9 C) 8 D) 7
6, 250-b.

18. Quyidagi birikmalardan qaysi biri *sis*-, *trans*- izomerlar holida mavjud bo'la olmaydi?

- A) siklotetradekandiol-1,6 B) siklodekandiol-1,6
C) siklogeksandiol-1,3 D) siklopentandiol-1,2
26, 25-b.

19. Quyidagi ikkita *sis*-siklogeksandiol-1,2 bir-biriga nisbatan qanday izomer?



A)

konfiguratsion (konfiguratsiyaviy) enantiomer

- B) konformatsion (konformatsiyaviy) enantiomer
C) konfiguratsion (konfiguratsiyaviy) diastereomer
D) konformatsion (konfiguratsiyaviy) diastereomer
2, τ.1. c. 224; 6, 251-b; 15, c. 285-289

20. *Trans*-siklogeksandiol-1,2 ikkita (bir juft) qanday izomer holida uchraydi?

- A) konfiguratsion (konfiguratsiyaviy) diastereomer
B) konformatsion (konformatsiyaviy) enantiomer
C) konformatsion (konfiguratsiyaviy) diastereomer
D) konfiguratsion (konfiguratsiyaviy) enantiomer
6, 250-251-b; 15, c. 285-289

21. Digalogenli hosilalarni natriy metalli bilan degalogenlab sikloalkanlar (siklopropan, siklobutan, siklopentan va ularning gomologlari) olish usulini qachon va kim kashf qilgan?

- A) 1881-yilda Markovnikov B) 1882-yilda Freynd
C) 1887-yilda Gustavson D) 1901-yilda Dikman
11, c. 212; 26, 10-b.

22. 1,4-dibrombutan va 1,5-dibromsiklopentan dioksan yoki tetragidrofuranda litiy amalgamasi bilan reaksiyaga kirishganda yaxshi unum bilan tegishli ravishda siklobutan va siklopentan hosil bo'ladi. Bu reaksiyalarni qachon va kim(lar) kashf qilganlar?

- A) 1967 yilda Konnor va Uilson B) 1885 yilda Bayer
 C) 1968 yilda Levina va Shabarov D) 1947 yilda Prelog va

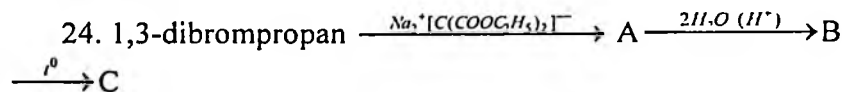
Shtol

26, 11-b.

23. Siklogeksanonni olish uchun qaysi dikarbon kislotaning kalsiyli tuzini piroliz qilish kerak?

- A) glutar kislotaning B) adipin kislotaning
 C) pimelin kislotaning D) po`kak kislotaning

18, 376-b.

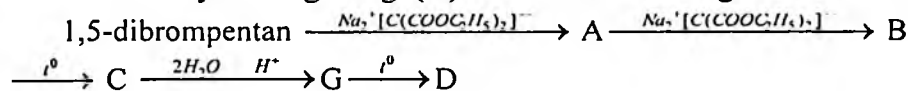


Reaksiyalarning oxirgi (C) mahsulotni nomlang.

- A) siklopropankarbon kislota
 B) 1,1-siklopropandikarbon kislota
 C) 1,1-siklobutandikarbon kislota
 D) siklobutankarbon kislota

6, 252-b, 22, c. 318

25. Reaksiyalarning oxirgi (D) mahsulotni nomlang.



- A) siklogeksankarbon kislota
 B) 1,1-siklopentandikarbon kislota
 C) 1,1-siklogeksandikarbon kislota
 D) siklogeksanon

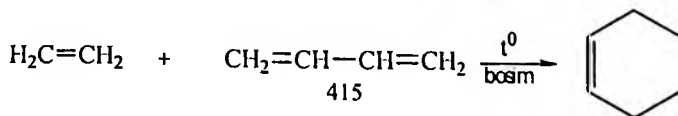
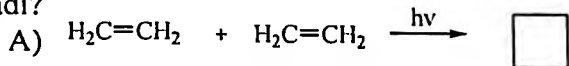
22, c. 318

26. Siklogeksan texnikada qanday usul bilan olinadi?

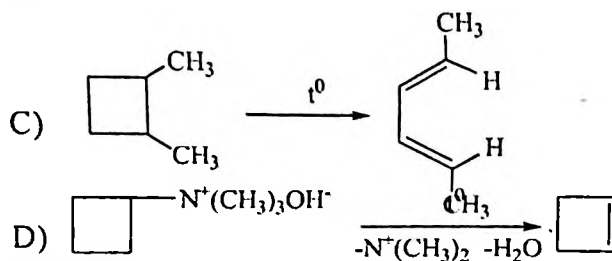
- A) siklogeksenni katalitik gidrogenlash
 B) siklogeksanonni qaytarish
 C) 1,3-siklogeksadiyenni katalitik gidrogenlash
 D) benzolni katalitik gidrogenlash

2, τ.1, c. 227; 3, c. 168;

27. Quyidagi reaksiyalardan qaysi biri elektrotsiklik reaksiyalarga kiradi?

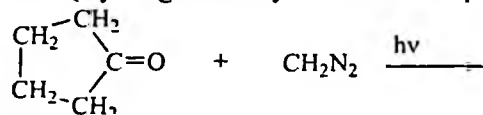


B)



6, 255-b.

28. Quyidagi reaksiya mahsuloti qanday alitsiklik birikma?



- A) siklogeksan B) siklogeksanon
C) siklopentanol D) 2-metilsiklopentanon-1

19, KH.II, c. 559

29. Diyen sintezi bilan alitsiklik birikmalar olish qanday reaksiyalarga kiritiladi?

- A) elektrolitik B) topologik C) telomerlanish D) siklobirikish

30. Halqadagi uglerod atomlari soni 30 va undan ko'p bo'lgan yuqori sikllarni olishda qaysi olimning xizmati katta?

- A) A.M. Butlerovning B) A. Bayerning
C) A. Kekulening D) L. Rujichkaning

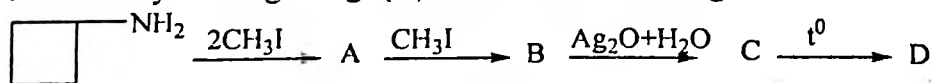
21, c. 283; 22, c. 315

31. Halqadagi uglerod atomlari soni 30 va undan ko'p bo'lgan yuqori sikllarni olish uchun dikarbon kislotalarning qanday tuzlari quruq haydaladi?

- A) natriyli B) kaliyli C) toriyli D) magniyli

21, c. 283

32. Reaksiyalarning oxirgi (D) mahsulotini nomlang.



- A) metilsiklopropen B) metilsiklopropan
C) siklobutadiyen-1,3 D) siklobuten

6, 254-b.

33. Sikloalkanlarning qaysi biri eng qiyin gidrogenlanadi?

- A) metilsiklobutan B) metilsiklopentan
C) metilsiklopropan D) etilsiklopropan

18, 378-b.

34. Sikloalkanlarning qaysi biri eng oson gidrogenlanadi?

- A) metilsiklobutan B) metilsiklopropan
C) etilsiklobutan D) metilsiklopentan

18, 378-b.

35. Katalitik gidrogenolizda birikmalardan qaysi birining siklopropan halqasi qiyin uziladi (ochiladi)?

- A) siklopropan B) metilsiklopropan
C) etilsiklopropan D) siklopropankarbon kislota

19, кн. II, с. 540; 26, 25-b.

36. Quyidagi sikloalkanlarning qaysi biri katalitik gidrogenoliz reaksiyasiga kirishmaydi?

- A) siklogeksan B) metilsiklopentan
C) 1,3-dimetilsiklopentan D) 1,2-dimetilsiklopentan

26, 25-b.

37. Quyidagi sikloalkanlardan qaysi biri brom bilan birikish reaksiyasiga kirishmasdan, faqat o`rin olish reaksiyasiga kirishadi?

- A) siklopropan B) siklopentan
C) metilsiklopropan D) sis-1,2-dimetilsiklopropan

18, 378-379-b.; 26, 26-b.

38. Quyidagi sikloalkanlardan qaysi biri vodorod bromidni biriktirmaydi?

- A) metilsiklopropan B) etilsiklopropan
C) metilsiklobutan D) metilsiklopentan

26, 27-b.

39. Siklopentanni kuchli oksidlovchilar ta`sirida oksidlanganda qanday birikma hosil bo`ladi?

- A) metilmalon kislota B) adipin kislota
C) glutar kislota D) qahrabo kislota

18, 379-380-b.; 26, 27-28-b.

40. Siklogeksen, siklogeksadiyen va ularning gomologlari platina yoki palladiy ishtirokida vodorod atomlarini qayta taqsimlash (termik katalitik disproporsionirlash) reaksiyasiga kirishadi. Bu qaytmas kataliz reaksiyasi qaysi olimning nomi bilan yuritiladi?

- A) V.V. Markovnikov B) Y.N. Demyanov
C) N.M. Kinjer D) N.D. Zelinskiy

6. c. 257-258; 26. 29-30-b.

41. Qaytmas kataliz reaksiyasi sharoitida 1-metil-4-izopropil-1-siklogeksendan qanday uglevodorod(lar) hosil bo`ladi?

- A) faqat 1-metil-4-izopropilsiklogeksan
- B) faqat 1-metil-4-izopropilbenzol
- C) faqat 1-metil-4-izopropil-1,3-geksadiyen
- D) 1-metil-4-izopropilsiklogeksan va 1-metil-4-izopropilbenzol

3. c. 171; 21. c. 288

42. 1,3-siklopentadiyen ishqoriy muhitda (ishqorning spirtdagi eritmasi, natriy etilat ishtirokida) alifatik aldegid va ketonlar bilan kondensatlanib, rangli birikmalar hosil qiladi. Bu birikmalar qanday umumiy nom bilan yuritiladi?

A) metallotsenlar B) fulvenlar C) prostaglandinlar D) pramanlar

21. c. 291

43. Siklopropan reagentlarning qaysi biri bilan reaksiyaga kirishmaydi?

- A) bromning to`rtxlorli ugleroddagi eritmasi
- B) nur ishtirokida xlor
- C) 100°C da nikel ishtirokida vodorod
- D) kaliy permanganatning neytral sovuq eritmasi

15. c. 269 i 295-296

44. Siklopropan halqasini saqlagan birikmalarning IQ-spektrida halqaning deformatsion tebranishlari qaysi sohalarda kuzatiladi?

- A) 800-810 sm^{-1}
- B) 1000-1050 sm^{-1}
- C) 1250-1300 sm^{-1}
- D) 1350-1400 sm^{-1}

11. c. 215

45. Siklopropaning IQ-spektrida C-H bog`larining valent tebranishlari qaysi sohada kuzatiladi?

- A) 2500-2650 sm^{-1}
- B) 2750-2800 sm^{-1}
- C) 3010-3100 sm^{-1}
- D) 3200-3300 sm^{-1}

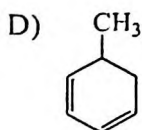
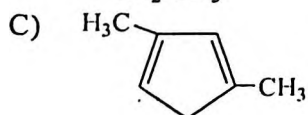
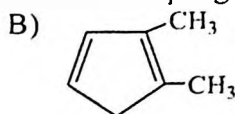
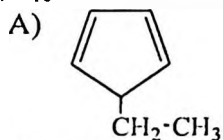
11. c. 215

46. C_6H_{12} tarkibli birikmaning PMR - spektrida bitta signal (δ 1,42 m.h.) bor. Birikmaning tuzilishini aniqlang.

- A) siklogeksan
- B) metilsiklopentan
- C) etilsiklobutan
- D) n-propilsiklopropan

17. c. 76

47. C_7H_{10} tarkibli optik faol modda malein angidridni biriktiradi. palladiy ishtirokida qizdirilganda 2 atom vodorodni ajratib, toluolga aylanadi. C_7H_{10} tarkibli moddaning tuzilishini aniqlang.



6, 247- va 257-b.

48. Birikmalardan qaysi biri gidrosilamin bilan reaksiyaga kirishganda oksim hosil bo'ladi?

A) xlorciklogeksan

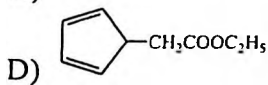
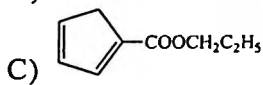
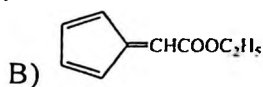
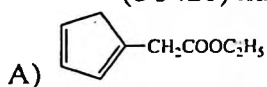
B) metilsiklogeksan

C) siklogeksanon

D) siklogeksanol

19, кн. II, с. 555

49. Quyidagi birikmalardan qaysi birining UB-spektrida λ_{maks} 248 nm (ϵ 3420) kuzatiladi?



17, с. 29

50. Sikloalkanlar IQ-spektrlarida CH_2 -guruhlarining tebranish chastotalari qaysi intervalda kuzatiladi?

A) $1510-1550\text{ cm}^{-1}$

B) $1440-1470\text{ cm}^{-1}$

C) $1560-1590\text{ cm}^{-1}$

D) $1610-1640\text{ cm}^{-1}$

8, с. 358

51. C_6H_{12} tarkibli birikma PMR-spektrida δ 1,42 m.h. da bitta signal bor. Uning tuzilishini aniqlang.

A) siklogeksan B) geksen-1 C) geksen-2 D) 2-metilpenten-2

17, с. 76

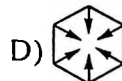
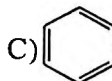
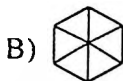
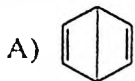
1. "Aromatiklik" tushunchasi (qoidasi)ni fanga qaysi olim kiritdi?

A) K. Ingold B) A. Kekule C) R. Xofman D) E.

Xyukkel

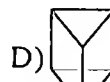
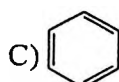
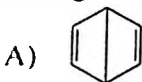
1, ч.2, с. 332; 2, т.1, с. 387; 26, 46-b.

2. A. Kekule benzol uchun quyidagi tuzilish formulalaridan qaysi birini taklif qildi?



1. ч.2. с. 328; 26, 38-b.

3. Benzol uchun quyidagi tuzilish formulalaridan qaysi birini Ladenburg taklif qildi?



1. ч.2. с. 329; 26, 39-b.

4. Benzol uchun tuzilishli formulani qaysi olim taklif qildi?

A) Klaus B) Ladenburg C) Kekule D) Dyuar
26. 38-b.

5. Benzol uchun tuzilishli formulani kim taklif qildi?
A) Klaus B) Ladenburg C) Kekule D) Dyuar
1, ч.2, с. 329; 26, 38-b.

6. Benzolning rezonans energiyasi necha kJ/mol ga teng?

A) 182 B) 170 C) 166 D) 150,8

26, 41-b.

7. Benzoldagi uglerod atomlarining erkin valentlik indeksi nechga teng?

A) 0,399 B) 0,451 C) 0,459 D) 0,520

26. 45-b.

8. Benzoldagi har qaysi C–C tartibi nechga teng?

A) 1,667 B) 1,586 C) 1,535 D) 1,606

26, 45-b.

9. Benzoldagi π -bog' tartibi nechga teng?

A) 0,886 B) 0,840 C) 0,667 D) 0,590

26, 45-b.

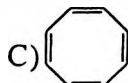
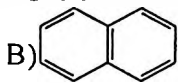
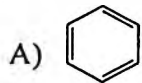
10. E. Xyukkel qoidasiga asosan aromatik xossalarga ega bo'lishi uchun halqali birikma halqasida nechta π -elektron saqlanishi kerak?

A) 1,5,9,13,17,21,25 va hokazo B) 2,6,10,14,18,22,26 va hokazo

C) 3,7,11,15,19,23,27 va hokazo D) 3,9,15,21,27,33,39 va hokazo

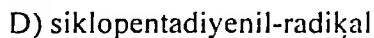
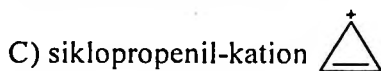
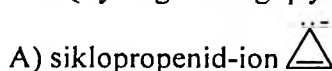
2, т.1. с. 387; 26, 46-b.

11. Birikmalarning qaysi biri aromatik xossalarga ega emas?



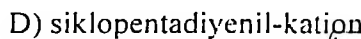
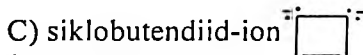
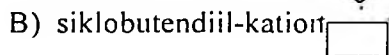
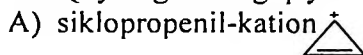
26, 47-b.

12. Quyidagilarning qaysi biri nobenzoid aromatik sistema?



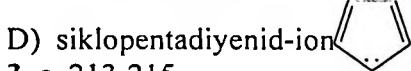
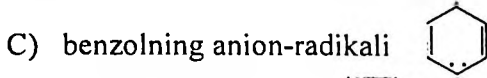
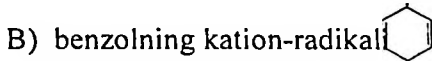
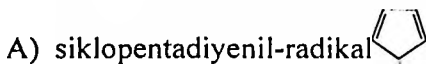
3, с. 214; 26, 48-b.

13. Quyidagilarning qaysi biri antiaromatik sistema?



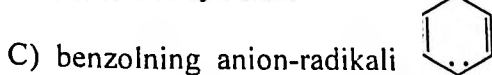
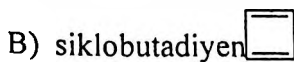
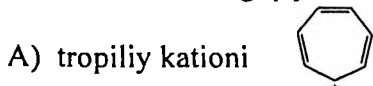
3, с. 213-215


14. Quyidagilarning qaysi biri nobenzoid aromatik sistema?



3, с. 213-215

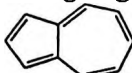
15. Sistemalarning qaysi biri nobenzoid aromatik sistema?

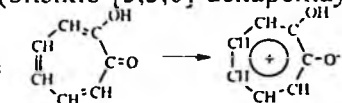


D) siklogeptatriyenil-radikal 

3, c. 213-216; 26, 49-b.


16. Birikmalarning qaysi biri aromatik xossalarga ega emas?

A) Azulen (bitsiklo-[5,3,0]-dekapentayen 

B) tropolon 

C) ferrotsen yoki disiklopentadiyenilferrum

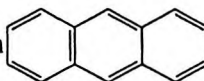


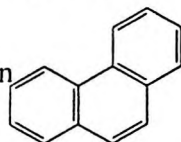
D) siklogeptatriyen 


21, c. 442-450; 22, c. 463-471; 26, 47-b.

17. Birikmalarning qaysi biri aromatik xossalarni namoyon qilmaydi?

A) naftalin 

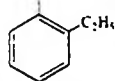
B) antratsen 

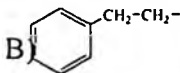
C) fenantren 

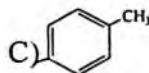
D) siklooktatetrayen-1,3,5,7 

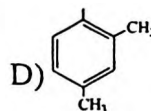
26, 47-b.

18. Arillarning qaysi biri fenetil- deb yuritiladi?

A) 

B) 

C) 

D) 

3, c. 178

19. C_8H_{10} tarkibli benzol qatori uglevodorodlarining soni nechta?

A) oltita

B) beshta

C) to'rtta

D) uchta

21, c. 302

20. C_9H_{12} tarkibli izomer benzol qatori arenlarining soni nechta?

A) 6 ta

B) 7 ta

C) 8 ta

D) 9 ta

6, 263- va 267-b.

21. Uchta har xil alkil radikal saqlagan uch almashingan benzol (masalan, metiletilpropilbenzol)ning nechta izomeri bor?

- A) 12 ta B) 10 ta C) 9 ta D) 8 ta
6, 267-b.

22. Dimetilbenzol(ksilol)larning nechta izomeri bor?

- A) 3 ta B) 4 ta C) 5 ta D) 6 ta
6, 258-b; 26, 51-b.

23. Trimetilbenzollar soni nechta?

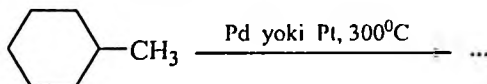
- A) 7 ta B) 6 ta C) 5 ta D) 3 ta
26, 53-b.

24. Toluol olish uchun qaysi alkanni degidrotsikllanish reaksiyasiga kiritish kerak?

- A) *n*-geksanni B) *n*-septanni
C) *n*-oktanni D) 3,4-dimetilpentanni

3, c. 179; 26, 55-b.

25.



Reaksiya natijasida qanday aren hosil bo' ladi?

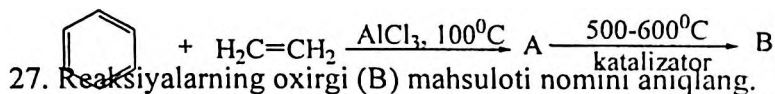
- A) benzol B) toluol C) *o*-ksilol D) *m*-ksilol

3, c. 179; 26, 54-b.

26. 1,3,5-trimetilbenzolni olish uchun qaysi uglevodorodni siklotrimerlash kerak?

- A) propilen B) etilen C) atsetilen D) propin

3, c. 154; 18, 414-b; 26, 260-b.

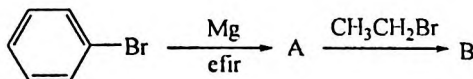


27. Reaksiyalarning oxirgi (B) mahsuloti nomini aniqlang.

- A) etinilbenzol B) stirol C) 1,4-divinilbenzol D) *o*-ksilol

26, 57-b.

28.



Reaksiyalar oxirgi (B) mahsuloti qanday aren?

- A) stirol B) allilbenzol
C) etinilbenzol D) etilbenzol

26, 55-b.

29. Metilsiklogeksan $\xrightarrow{Pd, t, P}$...




Reaksiya mahsuloti qanday uglevodorod?

- A) toluol B) benzol C) stirol D) metilensiklogeksan
21, 304-b.

30. Aromatik uglevodorodlar qaysi moddalar ta'sirida sifat reaksiyasini beradi?

- A) kons. sulfat kislota va dietilefir
B) etanol va kaliy permanganat kristallari
C) dioksan va kaliy xlorid kristallari
D) xloroform yoki uglerod(IV) xlorid va suvsiz alyuminiy xlorid
6, 268-b.

31. Benzolga ultrabinafsha nur ta'sir ettirilganda uning qanday izomer(lar) hosil bo'ladi?

- A) faqat benzvalen 
B) faqat prizman (Ladenburg benzoli) 
C) faqat Dyuar benzoli 

D) benzvalen, prizman, Dyuar benzoli va fulven

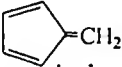
3. c. 193: 6, 268-269-b.

32. Benzvalen, prizman va Dyuar benzoli benzolning qanday izomerlari

- A) strukturaviy izomerlari B) metamerlari
C) optik izomerlari D) valent izomerlari

3. c. 193: 6, 268-269-b.

33.

Fulven  benzolning qanday izomeri?

- A) strukturaviy izomeri B) metameri
C) optik izomeri D) tautomeri

6, 269-b.

34. Benzolni V_2O_5 katalizatorligida $400-500^{\circ}C$ da havo kislorodi bilan oksidlaganda hosil bo'ladigan organik birikmaning tuzilishini aniqlang.

- A)
$$\begin{array}{cccc} \text{HOOC}-\text{C}-\text{H} & \text{H}-\text{C}-\text{COOH} & \text{H}_2\text{C}-\text{COOH} & \text{HC}-\text{CH}_2-\text{COOH} \\ \parallel & \parallel & | & \parallel \\ \text{H}-\text{C}-\text{COOH} & \text{H}-\text{C}-\text{COOH} & \text{H}_2\text{C}-\text{COOH} & \text{HC}-\text{CH}_2-\text{COOH} \end{array}$$

26, 64-b.

35. Yadrosini monoxlorlaganda faqat bitta izomer hosil qiladigan C_9H_{12} tarkibli arenni nomlang.

A) 1-metil-3-etilbenzol B) 1-metil-4-etilbenzol

C) 1,2,3-trimetilbenzol D) 1,3,5-trimetilbenzol

36. 0,2 mol benzolni yoqish uchun necha mol kislorod sarflanadi?

A) 0,3 mol B) 0,4 mol C) 0,1 mol D) 1,5 mol

6, 266- va 270-b.

36. Benzol halqasidagi o`rinbosarlarning qaysi biri yangi (ikkinchi) elektrofil o`rinbosar (reagent)ni *m*-holatga yo`naltiradi?

A) $-OH$ B) $-CH_3$ C) $-NO_2$ D) $-OCH_3$

26, 69-b.

37. Benzol halqasidagi o`rinbosarlardan qaysi biri ikkinchi elektrofil o`rinbosar (reagent) ni *o*- va *p*-holatlarga yo`naltiradi?

A) $-NO_2$ B) $-COOH$ C) $-SO_3H$ D) $-NH_2$

26, 68-b.

38. Benzol halqasidagi o`rinbosarlardan qaysi biri ikkinchi nukleofil reagentni *o*- va *p*-holatlarga yo`naltiradi?

A) $-COOH$ B) $-CH_3$ C) $-SH$ D) $-N(CH_3)_2$

21, c. 316-318

39. O`rinbosarlardan qaysi biri yangi (ikkinchi) nukleofil o`rinbosarni *m*-holatga yo`naltiradi?

A) $-CCl_3$ B) $-CN$ C) $-CHO$ D) $-N(CH_3)_2$

21, c. 316-318

40. O`rinbosarlardan qaysi biri ikkinchi elektrofil o`rinbosarning yadroga kirishini juda osonlashtiradi?

Testlarning javoblari

Test	Javob	Test	Javob	Test	Javob
1	B	29	C	53	B
2	B	30	A	54	C
3	D	31	D	55	B
4	B	32	D	56	D
5	A	33	B	57	D
6	C	34	D	58	B
7	D	35	B	59	A
8	D	36	D	60	C

9	D	37	B	61	A
10	D	38	C	62	C
11	C	39	A	63	A
12	D	40	B	64	A
13	D	41	B	65	B
14	C	42	C	66	B
15	B	43	D	67	C
16	C	44	D	68	D
17	B	45	A	69	D
18	A	46	D	70	A
19	A	47	B	71	D
20	D	48	C	72	B
21	C	49	C	73	C
22	C	50	D	74	C
23	D	51	D	75	C
24	D	52	C	76	D
25	C	D	B	77	D
26	B	A	A	78	C
27	C	D	D	79	D
28	D	B	D	80	D

XXV BOB. MURAKKAB MASALALAR

1. Vodorod, metan va CO ning 1 l aralashmasining massasi 17 °C va 98,6 kPa bosimda 0,8 g keldi. Ana shu aralashmadan 1 hajmini to'liq yondirish uchun 1,4 hajm kislorod sarflanadi. Aralashmaning hajmiy tarkibini (%) aniqlang.

2. Yetarli miqdorda olingan etilyodid bilan 46 g natriyning reaksiyaga kirishish mahsuloti $AlCl_3$ (kat.) qizdirildi. Bunda qanday birikmalar olinadi? Uglevodorodning katalitik o'zgarish foizi 75% ekanligini e'tiborga olib, hosil bo'lgan birikmalarning massalarini aniqlang.

3. Bug'larining vodorodga nisbatan zichligi 36 ga teng bo'lgan 7,2 g organik modda yondirilganda 22 g CO_2 va 10,8 g suv hosil bo'ldi. Boshlang'ich birikma radikal xlorlanganda faqat bitta monoxlorli hosila olinishini bilgan holda birikmaning tuzilishini aniqlang.

4. 8,4 g massali uglevodorod bromli suvni rangsizlantiradi, katalizator ishtirokida 3,36 l vodorodni biriktirib oladi, uglevodorod sovuqda $KMnO_4$ ning suvdagi eritmasi ta'sirida oksidlanganda simmetrik tuzilgan $C_4H_{10}O_2$ tarkibli birikma hosil bo'ladi. Uglevodorodning tuzilishini aniqlang.

5. n-Geksan katalitik degidrogenlanganda izomer geksenlar bilan geksanning 42,2 g aralashmasi olindi. Geksenlarni boshlangich parafin uglevodorod qo'shimchasidan tozalash uchun olingan aralashmaga bromli suv ta'sir ettirildi va reaksiya mahsuloti haydash yo'li bilan geksandan ajratildi. So'ngra qoldiq 26 g rux metali bilan to'liq reaksiyaga kirishdi. Tegishli reaksiyalarning tenglamalarini yozib, tozalashning shu usulining mexanizmini tushuntirib bering va geksanning degidrogenlanishida mahsulot unumi nazariy unumning necha (%) ni tashkil etganligini aniqlang.

6. Benzol bilan siklogeksanning 47,4 g aralashmasi Pt katalizator ishtirokida qizdirib turib degidrogenlandi. Natijada 12,3 g nitrobenzolni anilinga aylantirish uchun yetarli miqdorda gaz ajralib chiqdi. Degidrogenlashda hosil bo'lgan uglevodorodga yorug'da xlor ta'sir ettirildi. Ana shu reaksiyaga zaruriy miqdorda xlor olish uchun NaCl ning qancha massasini elektroliz qilish lozimligini dastlabki aralashma tarkibini toping.

7. 78 g benzol $FeBr_3$, ishtirokida Br_2 bilan o'zaro ta'sirlashganda

xuddi shuncha massali brombenzol hosil bo'ldi (bunda dibrombenzol hosil bo'lishi kuzatilmaydi). Benzolni bromlashda nazariy jihatdan olingan miqdorda hosil bo'lgan vodorod bromidni biriktirib olish uchun qancha hajm etilen kerak bo'ladi? Benzolni bromlash reaksiyasining unumi qanday bo'lishini aniqlang.

8. Molekulyar massasi 62 ga teng bo'lgan C, H, O dan iborat organik modda yondirilganda 280 ml kislorod sarflanib 0,27 g suv va 224 ml CO₂, hosil bo'ldi. Agar 0,31 g noma'lum modda 0,23 g Na bilan reaksiyaga kirishishi ma'lum bo'lsa uning struktura formulasini toping.

9. Molekulyar massasi 70 g bo'lgan noma'lum 0,7 g A modda yondirilganda 1120 ml CO₂, va 0,9 g H₂O hosil bo'ladi. Agar 0,7 g A H₂SO₄ bilan K₂Cr₂O₇ yordamida oksidlanib A va B moddalar aralashma hosil qilindi. Aralashmada 0,58 g B modda bor B modda vodorodni biriktirib C moddani hosil qiladi. Moddalarning struktura formulalarini va kimyoviy jarayonning tenglamalarini yozing.

10. C,H,O dan iborat, molekulyar massasi 88 ga teng bo'lgan organik moddaning 44 grammi yondirilganda 560 ml CO₂, hosil bo'ldi. Noma'lum moddaning molekulyar formulasini toping.

11. 1,18 g noma'lum organik kislota 0,46 g ishqoriy metall bilan reaksiyaga kirishib 224 ml H₂ hosil qiladi. Organik kislotaning molekulyar massasi 118 ga teng bo'lsa uning struktura formulalarini va ishqoriy metall molekulyar massasini toping.

12. Noma'lum spirt A molekulyar massasi 92 ga teng bo'lib u sirka ангидрид bilan ishlov berilganda B modda hosil bo'ldi. B modda molekulyar massasi 218 ga teng bo'lsa A modda sturukturasini yozing.

13. C, H, O dan tashkil topgan molekulyar massasi 62 ga teng bo'lgan modda sirka kislota bilan reaksiyaga kirishadi. Shu moddaning struktura formulasini yozing.

14. n ta C d ta qo'shbog' t ta uchbog' va s ta halqadan iborat birikma formulasini chiqaring, faqat juft sondagi C atomi saqlagan hol uchun a) alkenlar b) alkinlar d) benzol yadrosi tutgan tarmoqlari to'yingan uglevodorodlar uchun umumiy formulalarni chiqaring

15. Normal sharoitdagi uglevodorod yondirilganda normal sharoitda uning hajmidan R marta katta bo'lgan CO₂ va H₂O bug'lari hosil bo'lgan bo'lsa uglevodorodlar uchun R qanday maksimum qiymatlar qabul qiladi.

16. Qanday uglevodorodlar tarkibi - molekulada C atomlari soniga bogliq emas.

17. C_6H_{10} tarkibli birikma kislotali muhitda $K_2Cr_2O_7$ bilan oksidlanganda X dikarbon kislota hosil qiladi. X modda ThO_2 bilan qizdirilganda suv ajralib chiqdi. Tarkibli gaz modda hosil qiladi. Dastlabki moddaning struktura formulasini yozing.

18. Hamma gidroksi kislotalarda faqat juft sondagi vodorod atomlari tutadi degan jumlaning to'g'riligini isbotlang.

19. 1 mol $C_4H_8O_3$ tarkibli modda 2 mol Na yoki 1 mol NaOH bilan reaksiyaga kirishsa moddaning struktura formulasini yozing,

20. n ta C dan iborat R to'yinganlik darajasiga ega bir atomli spirtning molekulyar massasi $n - 1$ uglerod atomiga ega R to'yinmaganlik darajasiga ega bir atomli karbon kislota molekulyar massasiga tengligini isbotlang.

21. A modda analiz qilinganda C, H, O dan iborat bo'lishi mumkin. 43 g A modda 100 ml O_2 da yondirilganda hosil bo'lgan gazlar aralashmasi faol suv bug'lari bilan kondensatsiyalanganda 94,4 ml qolgan gazlar KOH bilan ishlov berilsa 49,6 ml gaz qoladi. Shu gaz ishqoriy eritmada pirogallolga to'liq yutiladi. A modda Tollens reaktivi bilan kumush ko'zgu reaksiyasi beradi va V tuz hosil qiladi. B modda ichki molekulyar degidratlanadi. A moddaning molekulyar massasi 86 ga teng.

a) moddalarning struktura formulalarini yozing; b) ko'rsatilgan imyoviy jarayonlar reaksiya tenglamasini yozing; d) Quyidagi qaysi modda A moddani qaytaradi; e) H_2 Pt katalizator; f) $KMnO_4 + H_2SO_4 + H_2O$; g) HCN (yoki KCN); Br_2 (CCl_4 dagi eritmasi).

22. Uglerod atomlar soni vodorod atomlari sonidan 2,5 marta kam bo'lgan uglevodorodning barcha izomerlarini yozing.

23. Har qanday uglevodorod ftorda yondirilganda C_nF_{2n+2} va HF hosil bo'ladi. Qaysi uglevodorodda $\nu_{C-F_{2n+2}}/\nu_{HF}$ nisbati kichik bo'ladi.

24. Asiklik uglevodorodni $C_{2R-1}H_{2R}$ formula bilan ifodalab bo'lmasligini tushuntiring ($R = 2, 3, 4 \dots$)

25. 2,67 g noma'lum polixlorli uglevodorod 1,6 g NaOH ning spirtidagi eritmasi bilan reaksiyaga kirishadi. Natijadi tarkibida 58,68% xlor saqlagan monoxlorli uglevodorod hosil bo'ldi. Reaksiyaga kirishgan va hosil bo'lgan xlorli uglevodorodning

struktura formulasini toping.

26. Qaysi uglevodorodning oddiy formulalari bilan molekulyar formulalari bir xil.

27. 24,24% C, 4,04% H va 71,72% Cl dan iborat A modda suv bilan yondirildi. Bunda kuchsiz asos B modda hosil bo'ldi. B modda kumush ko'zgu reaksiyasini beradi. A va B moddalar struktura formulalarini yozing.

28. Qaysi uglevodorodlar uchun nisbiy molekulyar massasidan molekulyar formulasini aniqlash mumkin.

29. A uglevodorod brom bilan reaksiyaga kirishib molekulyar massasi 188 ga teng birikma X_1 hosil qiladi. A ning formulasini toping.

30. 0,19 g C_3H_2 oddiy formulaga javob beruvchi A modda 0,115 g Na bilan reaksiyaga kirishadi. A modda Ni ishtirokida gidrogenlanib C_3H_6 formulaga javob beruvchi B modda hosil qiladi. A va V ni topib izomerlarini yozing.

31. $C_{10}H_{10}O_2$ tarkibli A modda kumush oksidining ammiakli eritmasi (Tollens) bilan va ishqoriy muhitda vino kislotasi tuzi, Fuksin sulfat kislotasi (Shiff) bilan qaytarilishdan so'ng $C_{10}H_{14}$ tarkibli X_1 modda hosil qiladi. Bu $FeBr_3$ bilan bromlanganda faqat bitta monobromli hosila X_1 ni qiladi. $C_{10}H_{14}$ modda H_2SO_4 ishtirokida $KMnO_4$ bilan oksidlanib tereftal kislotasi hosil qiladi. A modda tuzilishini toping.

32. C_8H_{10} tarkibli A aromatik modda nitrolovchi aralashma bilan ishlov berilganda V va V' moddalar hosil bo'lib ularning formulalarini $C_8H_9O_2N$ bilan ifodalash mumkin A modda kislotali muhitda $KMnO_4$ bilan oksidlanganda $C_7H_6O_2$ tarkibli C modda hosil bo'ladi. V va V' moddalar xuddi shu sharoida oksidlanganda D va D' moddalar hosil bo'ladi. A, V, V', S, D va D' ning tuzilishini toping.

33. 69,8% C, 11,6% H va kisloroddan iborat molekulyar massasi 86 ga teng A modda CH_3MgI bilan B modda hosil qiladi. B modda gidrolizdan C modda hosil bo'lib, bu modda ichki molekulyar dehidratlanib D moddani hosil qiladi. D ning oksidlanishidan ekvimolekulyar nisbatta atseton va propion kislotasi hosil bo'ladi. A, V, S, D ni tuzilishini toping.

34. $C_5H_{10}O$ tarkibli atsiklik A modda CH_3MgI bilan ishlov berilib so'ngra gidroliz qilinganda B moddani hosil qiladi B moddani dehidratlanishidan hosil bo'lgan mahsulot oksidlanishida (ozonoliz)

faqat atseton hosil bo'ladi.

a) A,B,Cning tuzilishini toping; b) A bilan CH_3MgI orasidagi reaksiya qaysi mexanizm bo'yicha boradi; d) A ni sintez qilish usullarini ayting.

35. $\text{C}_9\text{H}_{14}\text{O}_4$ tarkibli karboksil gruppalari maksimal uzoklashgan dikarbon kislota A berilgan bo'lib u bromli suvni rangsizlantiradi. A moddani xromli aralashma bilan ishlov berilganda ikkita V va C kislotalar hosil bo'ladi. B modda HCN ni oson biriktirishi mumkin. U qizdirilsa suvsizlanib $\text{C}_4\text{H}_4\text{O}_3$ tarkibli D modda hosil qiladi. Benzolning kislorod bilan oksidlanish (K_2O_5 , 500°C) maksulotiga tuzilish jihatdan o'xshaydi C kislotani tuzi asos sifatida HCN bilan reaksiyaga kirib E moddani hosil qiladi, bu modda kumush ko'zgu reaksiyasini beradi.

a) A-E moddalarni tuzilish formulalarini toping, jarayonlarni tenglamalarini yozing; b) A moddani brom bilan hosil qilgan modda izomeriyalarini yozing.

36. A karbon kislota $\text{C}_3\text{H}_8\text{O}_2$ formulaga ega bo'lib 2 ta A' (sis) A'' (trans) izomerga ega. Bu moddalar gidrogenlansa bitta modda hosil qiladi. Bu modda ratsemat karbon kislota bo'lib uni optik antipodga ajratish mumkin (enantiomer) V (+) V (-). A' va A'' qorong'ida CCl_4 eritmasida Br_2 bilan reaksiyaga kirishadi va C modda hosil qiladi.

a) A va B moddalarni tuzilishini toping; b) A' va A'' moddalarni Fisher proektsion formulasini enantiomerlarini yozing; d) A' va A'' moddalarni Br_2 bilan qaytarib olingan C moddaning nechta stereoizomerlari bor; e) C moddaning Fisher va Nyumen proektsion enantiomerlarini to'liq yozing. Qaysi enantiomerlar bir biriga juft (para).

37. 200 ml gazsimon uglevodorodga 700 ml kislorod (moddalar ekvimolekulyar nisbatda olingan) qo'shildi va yondirildi. Reaksiya tugagach aralashma hajmi 400 ml ga teng bo'ldi (suv bug'lari kondensatlangan). Uglevodorodning formulasini aniqlang.

38. 40 ml noma'lum gazsimon uglevodorodga 200 ml kislorod aralashtirildi va yondirildi. Reaksiya tugagach aralashma hajmi 140 ml ga teng bo'ldi (suv kondensatlangan). Aralashma ishqordan o'tkazilsa uning 80 ml ishqorga yutiladi. Uglevodorodning formulasini toping?

39. 400 ml noma'lum gazsimon uglevodorod 1000 ml kislorod bilan aralashtirildi va yondirildi. Reaksiya tugagach aralashma hajmi

800 ml ga teng bo'ldi. Agar dastlabki moddalar ekvimolekulyar miqdorda olingan bo'lsa, uglevodorodning formulasini toping?

40. Noma'lum gazsimon uglevodorodning hajmini xlorda yondirish uchun 4 hajm xlor sarf bo'ldi. Bu reaksiyaning mahsulotlaridan biri uglevodorod. Bu uglevodorodni kislorodda yondirish uchun 5 hajm talab qilinadi? Bu qanday uglevodorod?

41. 80 ml noma'lum uglevodorodga (0°C da) 500 ml kislorod qo'shildi va yondirildi. Reaksiya tugagach gazlarning hajmi 340 ml ga teng bo'ldi. KOH eritmasidan o'tkazganda esa aralashma hajmi 100 ml gacha kamaydi. Moddaning formulasini toping?

42. Tarkibida azot, oltingugurt va fosfor saqlamagan 200 ml organik modda bug'ining 900 ml li O_2 da yondirildi. Reaksiya tugagach gazlar hajmi 1,3 l ga teng bo'ldi, suv bug'ining kondensatsiyalanishidan so'ng hajm 100 ml ga teng bo'ldi. Moddaning formulasini toping?

43. Noma'lum bo'lgan uglevodorodning azot bilan 400 ml aralashmasiga 900 ml kislorod qo'shildi va yondirildi. Yondirilgandan so'ng hajm 1,4 l ga teng bo'ldi, suvning kondensatsiyasidan keyin esa 800 ml gacha kamaydi. KOH eritmasidan o'tkazilgandan keyin esa hajm 400 ml gacha kamaydi. Uglevodorodning formulasini toping?

44. Noma'lum bo'lgan uglevodorodning ammiak bilan 300 ml aralashmasiga ko'p miqdorda kislorod qo'shildi va yondirildi. To'liq yongandan so'ng gazlarning hajmi 1250 ml ga teng bo'ldi, suvning kondensatsiyasidan keyin u 550 ml gacha kamaydi. Ishqor bilan ishlov berilganda 250 ml gacha kamaydi, uning 100 ml azotga tegishli. Uglevodorodning formulasini toping?

45. 32,4 gr butadien-1,3 ning polimerlanishidan olingan namunada $2,8595 \cdot 10^{21}$ ta makromolekula bor. Reaksiyaga kirishmagan monomer 240 g 4%-li bromli suvni rangsizlantira oladi. Polibutadienning o'rtacha molekulyar massasini toping?

46. Massa nisbatlari 1:3:11 bo'lgan metan etan va propandan iborat 240 g gazlar aralashmasining hajmini(n.sh.da) va etanning hajmiy ulushini (%) hisoblang?

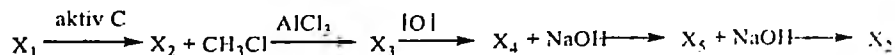
47. Aldegidning mis(II)gidroksid bilan reaksiyasi natijasida 43,2 g qizil cho'kma hosil bo'ldi. Shu aldegid qaytarilganda spirt hosil bo'ldi. Spirtning 4 ta molekulasida 48 ta sp^3 gibridlangan orbital bo'lsa, dastlabki aldegid massasini (g) aniqlang?

48. 12,5 g vinilxloridning polimerlanishidan hosil bo'lgan

namunada $7,743 \cdot 10^{20}$ ta makromolekula bor. Reaksiyaga kirishmagan monomer 100 g 3,2 %-li bromli suvni rangsizlantira oladi. Vinilxloridning o'rtacha molekulyar massasini toping.

49. Atsetilen, propin va butendan iborat 1,2 mol aralashma yonganda n.sh.da 76,76 l karbonat anhidrid va 45 g suv hosil bo'lsa. dastlabki aralashma tarkibidagi atsetilenning massa ulushini (%) aniqlang.

50.



ushbu reaksiyada X_1 modda simob tuzlari ishtirokida suv bilan reaksiyaga kirishib sirka aldegid hosil qilishi ma'lum bo'lsa. X_5 moddani aniqlang.

51. Izoprenning 27,2 grammni polimerlanishidan hosil bo'lgan namunada $1,52506 \cdot 10^2$ ta makromolekula bor. Polimerlanishda qatnashmagan izopren 320 g 2% - li bromli suvni rangsizlantiradi. Poliizoprenning o'rtacha molekulyar massasini toping.

52. Metan va propandan iborat 1 l,2 l (n.sh.da) aralashmani yoqish uchun $\varphi(\text{O}_2)=86\%$ bo'lgan kislorod va ozon aralashmasidan 1,4 mol sarflandi. Hosil bo'lgan karbonat anhidridni o'rta tuzga aylantirish uchun 21 % li ($r=1,2$ g/ml) kaliy gidroksidning eritmasidan necha ml kerak.

53. 672 ml etilen va atsetilendan iborat aralashmaga 1328 ml vodorod qo'shilib, platina katalizatori ustidan o'tkazilganda, uning hajmi reaksiya boshlanmasdan oldingi umumiy hajmiga nisbatan 39.2 % - ga kamaydi. Boshlangich aralashmani to'la yoqish uchun qancha hajm kislorod kerak bo'ladi.

54. Benzoldan kumol usuli bilan fenol olinganda oxirgi mahsulot massasi boshlangich modda massasidan 10,8 g ga kam bo'lsa. atseton massasini aniqlang. Reaksiya unumi birinchi bosqichda 80 %. ikkinchi bosqichda esa 75 % ga teng.

55. Uglerod va vodorod atomlari soni nisbati 1:3,5 bo'lgan metan va etandan iborat 6,72 l (n.sh.da) aralashma yonishidan hosil bo'lgan Mahsulot 80 g 40 % li natriy gidroksid bilan reaksiyaga kirishdi. Reaksiya Mahsulotlari nomi va massasini toping.



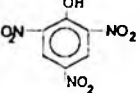
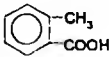
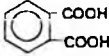
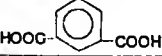
56. Atsetilendan benzol (reaksiya unumi 80 %), benzoldan kumol (reaksiya unumi 62,5 %), kumoldan fenol (reaksiya unumi 80 %) olinganda oxirgi mahsulot massasi boshlangich modda massasidan

40.4 g ga kam bo'lsa, kumol massasini toping.

57. (0.5 g propilenning polimerlanishidan olingan namunada $8.827 \cdot 10^{20}$ ta makromolekula bor. Reaksiyaga kirishmagan propen 79 g 6 %-li kaliy permanganatning suvli eritmasini rangsizlantiradi. Polipropilenning o'rtacha molekulyar massasini toping.

ILOVALAR
BA'ZI BIR ORGANIK MODDALARNING TARIXIY
NOMLARI

1-jadval

T/r	Moddaning formulasi	Nomlanishi
1	$\text{CH}_2 = \text{CH} - \text{CH}_2\text{OH}$	Allil spirt
2	$\text{C}_6\text{H}_5\text{OH}$	Fenol, karbol kislota
3	$\text{C}_6\text{H}_5\text{OCH}_3$	Anizol
4	$\text{C}_6\text{H}_5\text{OC}_2\text{H}_5$	Fenetol
5	$\text{HO} - \text{CH}_2\text{CH}_2\text{OH}$	Etilenglikol
6		Rezorsin
7		Gidroksinon
8		Pikrin kislota
9	HCOH	Formaldegid
10	CH_3COH	Sirka aldegid
11	$\text{CH}_3\text{CH}_2\text{COH}$	Propion aldegid
12	$\text{CH}_3\text{CH}_2\text{CH}_2\text{COH}$	Moy aldegid
13	$\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_2\text{COH}$	Izomoy aldegid
14	$\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{COH}$	Valerian aldegid
15	$\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_2\text{COH}$	Izovalerian aldegid
16	$\text{CH}_2 = \text{CHCOH}$	Akril aldegid
17	HCOOH	Chumoli kislota
18	CH_3COOH	Sirka kislota
19	$\text{CH}_3\text{CH}_2\text{COOH}$	Propion kislota
20	$\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$	Moy kislota
21	$\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{COOH}$	Valerian kislota
22	$\text{CH}_3\text{CH} = \text{CHCOOH}$	kroton kislota
23	$\text{C}_6\text{H}_5\text{COOH}$	Benzoy kislota
24		0-toluil kislota
25		Ftal kislota
26		Izoftal kislota

27	$\text{HOOC} - \text{C}_6\text{H}_4 - \text{COOH}$	Tereftal kislota
28	$\text{HO} - \text{CH}_2 - \text{COOH}$	Glikol kislota
29	$\text{CH}_3 - \text{CH}(\text{OH}) - \text{COOH}$	Sut kislota
30	$\text{HOOC} - \text{CH}_2\text{CH}(\text{OH}) - \text{COOH}$	Olma kislota
31	$\text{HOOC} - \text{CH}(\text{OH})\text{CH}(\text{OH}) - \text{COOH}$	Vino kislota
32	$\text{C}_6\text{H}_5 - \text{OH}$ COOH	salitsil kislota
33	$\text{Cl} - \text{CO} - \text{Cl}$	Fosgen
34	$(\text{NH}_2)_2\text{C} = \text{O}$	Karbamid, mochevina

FUNKSIONAL GURUHLARNING NOMLANISHI

2-jadval

formulasi	Nomi	formulasi	Nomi
$-\text{NH}_2$	-amino	$-\text{SO}_2\text{H}$	-sulfin kislota
$-\text{NHOH}$	-gidroksilamino	$-\text{SO}_3\text{H}$	-sulfon kislota
$-\text{NH}-\text{NH}_2$	-gidrazino	$-\text{F}$	-ftor
$-\text{OH}$	-ol	$-\text{Cl}$	-xlor
$-\text{SH}$	-tiol	$-\text{Br}$	-brom
$-\text{CO}-$	-on	$-\text{I}$	-yod
$-\text{CS}-$	-tion	$-\text{NO}$	-nitrozo
$-\text{COH}$	-al	$-\text{NO}_2$	-nitro
$-\text{CSH}$	-tial	$-\text{N}_3$	-azido
$-\text{COOH}$	-kislota		

MUHIM RADIKALLARNING SISTEMATIK NOMENKLATURA BO'YICHA NOMLANISHI

3-jadval

t/r	Formulasi	Nomi
1	$\text{CH}_3 -$	Metil
2	$\text{CH}_3\text{CH}_2 -$	Etil
3	$\text{CH}_3\text{CH}_2 - \text{CH}_2 -$	n-Propil
4	$\text{CH}_3\text{CH}(\text{CH}_3) -$	Izopropil
5	$\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2 -$	n-butil
6	$\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3) -$	Ikkilamchi butil
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8	$(\text{CH}_3)_3\text{C} -$	Uchlamchi butil

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MUNDARIJA

Soʻz boshi.....	3
I bob. Alkanlar	5
masala va mashqlar.....	5
testlar va ularni yechish uchun adabiyotlarga havolalar	21
II bob. Alkenlar	32
masala va mashqlar.....	32
testlar va ularni yechish uchun adabiyotlarga havolalar	47
III bob. Alkadiyenlar.....	56
masala va mashqlar.....	56
testlar va ularni yechish uchun adabiyotlarga havolalar	66
IV bob. Alkinlar	72
masala va mashqlar.....	72
testlar va ularni yechish uchun adabiyotlarga havolalar	84
V bob. Gomofunksional birikmalar	89
masala va mashqlar.....	89
testlar va ularni yechish uchun adabiyotlarga havolalar	99
VI bob. Uglevododrodlarning gidroksilli hosilalari spirtlar.....	105
masala va mashqlar.....	105
testlar va ularni yechish uchun adabiyotlarga havolalar	120
VII bob. Tiollar va oddiy efirlar	125
masala va mashqlar.....	125
testlar va ularni yechish uchun adabiyotlarga havolalar	134
VIII bob. Karbonil birikmalar.....	139
testlar va ularni yechish uchun adabiyotlarga havolalar	151
IX bob. Karbon kislotalar va ularning hosilalari	156
masala va mashqlar.....	156
testlar va ularni yechish uchun adabiyotlarga havolalar	173
X bob. Nitrobirikmalar.....	187
masala va mashqlar.....	187
testlar va ularni yechish uchun adabiyotlarga havolalar	197
XI bob. Aminlar	200
masala va mashqlar.....	200
testlar va ularni yechish uchun adabiyotlarga havolalar	212
XII bob. Metallorganik birikmalar.....	216
masala va mashqlar.....	216
testlar va ularni yechish uchun adabiyotlarga havolalar	222

XIII bob. Geterofunksional birikmalar	226
masala va mashqlar	226
testlar va ularni yechish uchun adabiyotlarga havolalar	234
XIV bob. Uglevodlar.....	237
masala va mashqlar	237
testlar va ularni yechish uchun adabiyotlarga havolalar	242
XV bob. Aminokislotalar va oqsillar.....	253
masala va mashqlar.....	253
testlar va ularni yechish uchun adabiyotlarga havolalar	257
XVI bob. Siklik birikmalar	263
masala va mashqlar.....	263
testlar va ularni yechish uchun adabiyotlarga havolalar	268
XVII bob. Aromatik birikmalar	277
masala va mashqlar	277
testlar va ularni yechish uchun adabiyotlarga havolalar	284
XVIII bob. Aromatik galoidbirikmalar.....	293
masala va mashqlar	293
testlar va ularni yechish uchun adabiyotlarga havolalar	298
XIX bob. Aromatik nitrobirikmalar	303
masala va mashqlar	303
testlar va ularni yechish uchun adabiyotlarga havolalar	306
XX bob. Aromatik uglevodorodlarning gidroksilli hosilalari	310
masala va mashqlar	310
testlar va ularni yechish uchun adabiyotlarga havolalar	313
XXI bob. Aromatik karbonil birikmalar	317
masala va mashqlar	317
testlar va ularni yechish uchun adabiyotlarga havolalar	319
XXII bob. Aromatik karbon kislotalar.....	323
masala va mashqlar	323
XXIII bob. Aromatik aminlar (arilaminlar).....	327
masala va mashqlar	327
testlar va ularni yechish uchun adabiyotlarga havolalar	332
XXIV bob. Geterotsiklik birikmalar	339
masala va mashqlar	339
testlar va ularni yechish uchun adabiyotlarga havolalar	342
XXV bob. Murakkab masalalar	427
Ilovalar.....	435
Tavsiya qilinadigan adabiyotlar	439

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ORGANIK KIMYODAN MASALA, MASHQ VA TESTLAR

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810