



## CHEMISTRY

### BOOKS - KUMAR PRAKASHAN KENDRA CHEMISTRY (GUJRATI ENGLISH)

## HYDROCARBONS

#### Section A Questions

1. What do you mean by hydrocarbons ? Give the names of the hydrocarbons that play a key role in our life daily life.



[View Text Solution](#)

2. Write the names of hydrocarbons fuel used in daily life and write their uses ?



 [View Text Solution](#)

3. Give the uses of hydrocarbon with examples.

 [View Text Solution](#)

4. Importance of hydrocarbons.

 [View Text Solution](#)

5. Given strength of pollutant agent of hydrocarbons which are use as fuel.

 [View Text Solution](#)

6. Give the classification depending upon bonds.

 [View Text Solution](#)

7. Give classification of hydrocarbons.

 [View Text Solution](#)

8. Give classification of hydrocarbons based on carbon-carbon bonds.

 [View Text Solution](#)

9. What do you mean by Alkane ? Explain the formation of alkane from methane, substituting the hydrogens by  $-CH_3$  groups ?

 [View Text Solution](#)

10. Give the general formula of alkane series and discuss about the structure of methane.

 [View Text Solution](#)

11. Give the name, formula and structure of the cycloalkane which have only one structure.

 [View Text Solution](#)

12. What is structural isomerism ? Give two isomers of chain isomerism of alkane.

 [View Text Solution](#)

13. Explain isomerism of alkane having more than three carbon by the two examples of alkane.

 [View Text Solution](#)

14. Give the forms of carbons with examples.

 [View Text Solution](#)

15. Give the number of isomers of methane ethane, propane, butane, pentane, hexane, heptane and decane.

 [View Text Solution](#)

16. Give the general formula of alkyl group with examples up to four carbon.

 [View Text Solution](#)

17. Give the preparations of alkane ? Give the general reaction.

 [View Text Solution](#)

18. Write the detail about hydrogenation of unsaturated hydrocarbon.

 [View Text Solution](#)

19. Give the preparation of alkane from the unsaturated hydrocarbons.

 [View Text Solution](#)

20. Give the example of preparation of alkane from the alkyl halide ?

 [View Text Solution](#)

21. Write about Wurtz reaction or give the preparation of alkane from alkyl halide by Wurtz reaction with the example and its limitations ?

 [View Text Solution](#)

22. Why is Wurtz reaction not preferred for the preparation of alkanes containing odd number of carbon atoms ? Illustrate your answer by taking one example.

 [View Text Solution](#)

23. Explain decarboxylation with its examples.

 [View Text Solution](#)

24. Give in the product by carboxylic acid method with examples ?

 [View Text Solution](#)

25. Give the formation of alkane by Kolbe's electrolysis method with its examples.

 [View Text Solution](#)

26. Give the preparation of alkane from carboxylic acid by the electrolysis.

 [View Text Solution](#)

27. Explain as there is increase in molecular weight of alkane there is increase in boiling point and melting point.

 [View Text Solution](#)

28. Explain why lower alkanes are gaseous in state and higher alkane are liquid in state ?

 [View Text Solution](#)

29. Give the difference in boiling point and meting point in alkane series in short ?

 [View Text Solution](#)

30. Give physical properties of alkane ?

 [View Text Solution](#)



31. Explain the difference between the boiling point of branched structures of pentane ( $C_5H_{12}$ ).

 [View Text Solution](#)

32. Explain the boiling point of isomeric branched structure of alkane.

 [View Text Solution](#)

33. Give the chlorination of methane in presence of  $h\nu$  ?

 [View Text Solution](#)

34. What is alkane substitution reactions ? Give different types of substitution reactions name and possibilities.

 [View Text Solution](#)

**35.** How do you account for the formation of ethane during chlorination of methane ?

 [View Text Solution](#)

**36.** Give mechanism of chlorination of methane.

 [View Text Solution](#)

**37.** Give the different types of reaction of alkane compound.

 [View Text Solution](#)

**38.** Give the combustion reaction of alkane.

 [View Text Solution](#)

39. Give the complete and incomplete combustion of heptane and nonane.

 [View Text Solution](#)

40. Explain the isomerization reaction of alkane.

 [View Text Solution](#)

41. Write a note on aromatization of alkane ?

 [View Text Solution](#)

42. Controlled oxidation of alkanes.

 [View Text Solution](#)

43. What is the pyrolysis of alkane ? Give reaction.

 [View Text Solution](#)

44. Give the reaction of methane by steam

 [View Text Solution](#)

45. Liberation of dihydrogen from methane by steam reaction ?

 [View Text Solution](#)

46. Complete the reaction as follows.



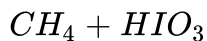
 [View Text Solution](#)

47. Complete the reaction as follows.



 [View Text Solution](#)

48. Complete the reaction as follows.



 [View Text Solution](#)

49. Complete the reaction as follows.

Controlled chlorination of ethane :

 [View Text Solution](#)

50. Complete the reaction as follows.

Complete oxidation of methane :





[View Text Solution](#)

51. Complete the reaction as follows.

Complete oxidation of butane :



[View Text Solution](#)

52. Complete the reaction as follows.

Complete oxidation of alkane :



[View Text Solution](#)

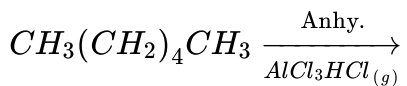
53. Complete the reaction as follows.

Incomplete combustion of methane :



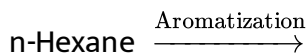
[View Text Solution](#)

54. Complete the reaction as follows.



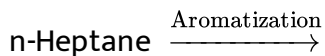
 [View Text Solution](#)

55. Complete the reaction as follows.



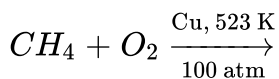
 [View Text Solution](#)

56. Complete the reaction as follows.



 [View Text Solution](#)

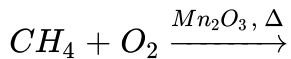
57. Complete the reaction as follows.





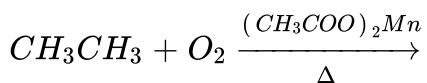
[View Text Solution](#)

58. Complete the reaction as follows.



[View Text Solution](#)

59. Complete the reaction as follows.



[View Text Solution](#)

60. Complete the reaction as follows.

Pyrolysis of hexane :



[View Text Solution](#)



**61.** Complete the reaction as follows.

Pyrolysis of kerosene :

 [View Text Solution](#)

**62.** Complete the reaction as follows.

Liberation of dihydrogen gas reaction :

 [View Text Solution](#)

**63.** Complete the reaction as follows.

Oxidation 2-methylpropane reaction :

 [View Text Solution](#)

**64.** Hexane from different type of product in different types of situation.

Give three reaction.





[View Text Solution](#)

65. Give the chemical reaction of methane.



[View Text Solution](#)

66. Prepare the following product from methane (i) Methyl chloride (ii) Carbon black (iii) Carbon monoxide (iv) Methanol (v) Methanal (vi) carbonmonoxide (vii) dihydrogen (viii) Methyl iodide (ix) Methyl bromide



[View Text Solution](#)

67. Write the preparation of methane from methyl chloride and acetic acid.



[View Text Solution](#)

68. Write the preparation of ethane.

 [View Text Solution](#)

69. Write the reaction of preparation of ethane from following reaction.

(i) Ethane (ii) Ethyl chloride (iii) Bromo-methane (iv) Propanoic acid (v) Acetic acid (vi) Methane (vii) from acetate ion.

 [View Text Solution](#)

70. What do you mean by conformation and conformer (Rotamers)

 [View Text Solution](#)

71. How many conformations of alkane are present ? Why ?

 [View Text Solution](#)

72. What do you mean by torsional strain ?

 [View Text Solution](#)

73. Give the difference between eclipsed ethane and staggered ethane ?

 [View Text Solution](#)

74. Explain saw horse projection with examples.

 [View Text Solution](#)

75. Explain conformers of newman projection with example.

 [View Text Solution](#)

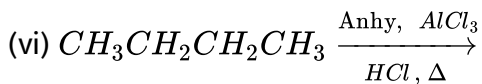
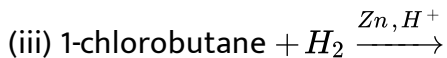
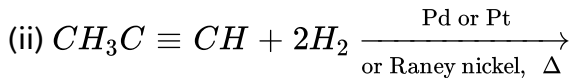
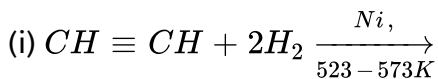
76. How many eclipsed and staggered ethanes is obtained if rotation of ethane of C-C of 0 to  $360^\circ$  ?

 [View Text Solution](#)

77. Explain change of energy with graph when internal ethane of C-C rotation after  $120^\circ$  .

 [View Text Solution](#)

78. Complete the below reaction :



 [View Text Solution](#)

79. From the following which types of ether's angle will be constant which angle will be changed ?

 [View Text Solution](#)

80. What do you mean by alkene ? Give its general formula and two examples.

 [View Text Solution](#)

81. What do you mean by olefin ? Give example ?

 [View Text Solution](#)

82. Give the structure of alkene having double bond.

 [View Text Solution](#)

83. Reactivity of alkene

 [View Text Solution](#)

84. Explain reactivity of alkene towards electrophilic.

 [View Text Solution](#)

85. Give the structure of orbit picture of ethene show (i)  $\sigma$ -bond (ii)  $\pi$ -bond (iii) Give the number of  $\sigma$  and  $\pi$ -bond. (iv) Write the dihybridisation.

 [View Text Solution](#)

86. Who is the first member of alkene series ? Give information about its bond and structure.

 [View Text Solution](#)

**87.** For the nomenclature of alkene, give the ruler of giving the names of structure ?

 [View Text Solution](#)

**88.** Give the formula, structure, IUPAC names and common name of alkene having carbon = 1, 2, 3, 4 ?

 [View Text Solution](#)

**89.** Give classification of nomenclature with example.

 [View Text Solution](#)

**90.** Give the information about structure of alkene.

 [View Text Solution](#)



91. Explain optical isomerism or Geometrical isomerism with example.

 [View Text Solution](#)

92. Whose boiling point is less in cis and trans geometer ? Explain with example.

 [View Text Solution](#)

93. In cis and trans, whose dipole moment is more, explain with example ?

 [View Text Solution](#)

94. Cis-but-2-ene is polar and trans-but-2-ene is non-polar explain.

 [View Text Solution](#)

95. Preparation of alkene by hydrogenation explain with example.

 [View Text Solution](#)

96. Prepare alkene from alkylhalide (dehydrohalogenation). Explain its detail.

 [View Text Solution](#)

97. Write in brief for the preparation of alkene from vicinal dihalide.

 [View Text Solution](#)

98. Explain with example dehalogenation of vicinal dihalide.

 [View Text Solution](#)

99. Write the preparation of alkene from alcohols by acidic dehydration.

 [View Text Solution](#)

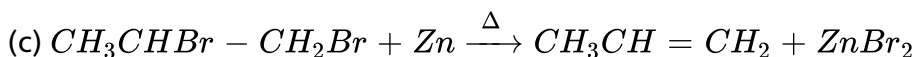
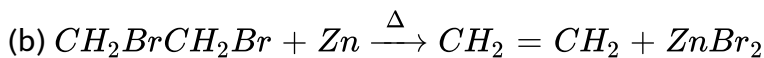
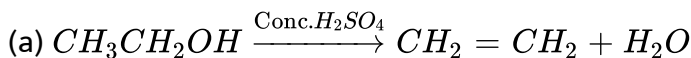
100. Explain with example acidic dehydration of alcohol.

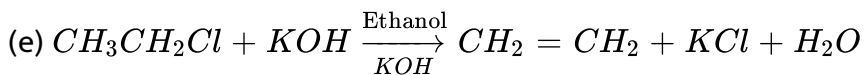
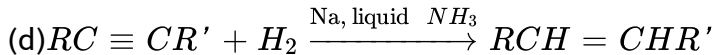
 [View Text Solution](#)

101. Give  $\beta$ -elimination of given alcohol reaction. (i) Propyl alcohol (ii) Isopropyl alcohol (iii) Cyclohexanol (iv) tertiary-butyl alcohol.

 [View Text Solution](#)

102. Given reactions are of which type ?





 [View Text Solution](#)

103. Give the physical properties of alkene ?

 [View Text Solution](#)

104. Give the types of reactions that alkene gives. Write the name of reaction.

 [View Text Solution](#)

105. Write the halogenation of alkene.

 [View Text Solution](#)

**106.** Explain Markanikov hydrohalogenation of alkene.

 [View Text Solution](#)

**107.** Explain the propene reacts with HBr.

 [View Text Solution](#)

**108.** Rules for Markonikov's and explain with example.

 [View Text Solution](#)

**109.** Anti Markovnikov's rule or peroxide effect (Kharas effect) or free radical addition reaction with example ?

 [View Text Solution](#)

110. Addition of sulphuric acid in alkene and addition of sulphuric acid in alkene with addition reaction.

 [View Text Solution](#)

111. Addition of  $H_2O$  into alkene.

 [View Text Solution](#)

112. Hydrolysis of alkene.

 [View Text Solution](#)

113. Formation of alcohol from alkene.

 [View Text Solution](#)

**114.** Write about ozonolysis of alkene.

 [View Text Solution](#)

**115.** Explain with example oxidation of alkene in different situations ?

 [View Text Solution](#)

**116.** What is polymerisation ? Write the example and uses of the reaction.

 [View Text Solution](#)

**117.** Write the polymerisation of alkene ?

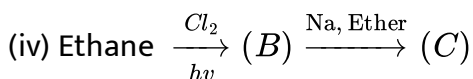
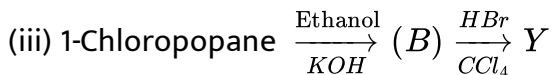
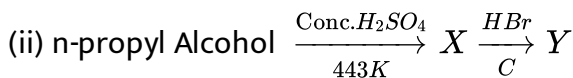
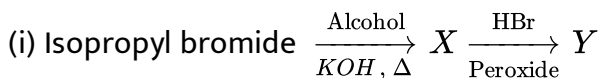
 [View Text Solution](#)

**118.** Addition of HBr to propene yields 2-bromo-propene, while in the presence of benzoyl peroxide, the same reaction yields 1-bromo-propane.

Explain and give mechanism.

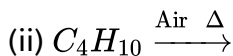
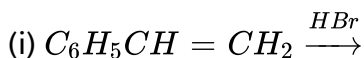
 [View Text Solution](#)

**119.** Complete the following reaction :

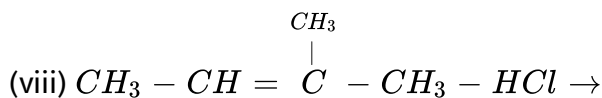
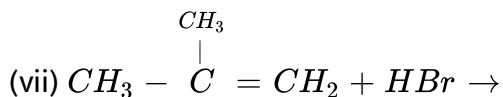
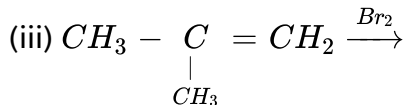


 [View Text Solution](#)

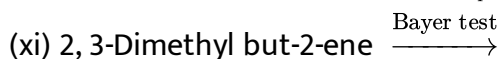
**120.** Write the main product of given reaction :







(ix) 3-Methyl but-1-ene+HBr



(xii) Cyclonexanol + alcoholic  $KOH + \Delta$

 [View Text Solution](#)

121. Give the primary information about alkyne.

 [View Text Solution](#)

122. Give the structure, formula and names of 1 to 4 carbon alkynes.

 [View Text Solution](#)

123. Give brief about structure of ethyne (Acetylene).

 [View Text Solution](#)

124. Give industrial preparation method of ethyne.

 [View Text Solution](#)

125. Give method of preparation of ethyne from calcium carbonate or calcium carbide.

 [View Text Solution](#)

126. Give method of preparation of ethyne (Acetylene) from vicinal dihalides.

 [View Text Solution](#)

**127.** Give main product of the following reaction. (in one step)

(i) 1, 2-dibromo propane + alcoholic KOH

(ii) 1, 1, 2,2-tetrabromo ethane + zinc powder in methanol

(iii) 1,1,2,2-tetrabromo propane + zinc powder in methanol.

(iv) Reaction occur on passing of hydrogen gas through carbon electrode at high temperature in electric arc.

 [View Text Solution](#)

**128.** Write about physical properties of alkyne.

 [View Text Solution](#)

**129.** Give brief note on acidic nature of alkyne.

 [View Text Solution](#)

130. Explain acidic nature of ethyne.

 [View Text Solution](#)

131. Explain : 'Hydrogen attached with carbon having triple bond is acidic in nature'. And write appropriate reaction for it.

 [View Text Solution](#)

132. Give distinguishing test for the following :

(a) ethane and ethyne (Alkane and alkyne  $RC \equiv CH$ )

(b) Ethene and Ethyne (Alkene and Alkyne  $RC \equiv CH$ )

(c) Dimethyl ethyne and ethyne

(d) Ethane and Ethene (Alkane and alkene)

 [View Text Solution](#)

**133.** Explain : "Why alkyne compound gives electrophilic addition reaction ?"

 [View Text Solution](#)

**134.** Give hydrogenation and halogenation reaction of alkyne.

 [View Text Solution](#)

**135.** Give reaction which shows hydro-halogenation and hydration of alkyne.

 [View Text Solution](#)

**136.** Write a note on addition of hydrogen halide and water into alkyne.

 [View Text Solution](#)

137. Explain polymerization of alkyne.

 [View Text Solution](#)

138. Give type of polymerization of alkyne and give note on each.

 [View Text Solution](#)

139. Write following reaction :

(i) Ethyne + ( $Cl_2$  or  $Br_2 + H_2O$ )  $\rightarrow$

(ii) Hydration reaction of 1-butyne.

(iii) Reaction of acetylene with HCN.

(iv) Hydrogenation of ethyne in presence of Lindlar catalyst ( $Pd, BaSO_4$ ).

(v) Complete combustion of ethyne in presence of air.

(vi) Reaction of propyne with alkaline  $KMnO_4$ .

(vii) Ozonolysis of ethyne.

 [View Text Solution](#)

**140.** Discuss how many types and which reaction are given by alkyne ?

 [View Text Solution](#)

**141.** Give reaction for following reaction.

 [View Text Solution](#)

**142.** Give basic information about aromatic hydrocarbon.

 [View Text Solution](#)

**143.** Explain and give examples of following :

(i) Aromatic (ii) Arene (iii) Benzenoid (iv) non-benzenoid

 [View Text Solution](#)

**144.** Only mono-substitution is possible in benzene, give its structure and name.

 [View Text Solution](#)

**145.** Give the numbers of product obtained by substitution of two hydrogen atoms from the benzene ring and also give its examples.

 [View Text Solution](#)

**146.** Write a detail note on structure of benzene.

 [View Text Solution](#)

**147.** Write the conditions which proves exceptional stability of benzene.

 [View Text Solution](#)



148. What is Aromatic ? Explain with suitable examples.

 [View Text Solution](#)

149. Write Huckel rule and explain with suitable example.

 [View Text Solution](#)

150. Write the requirements for aromatic character in compound.

 [View Text Solution](#)

151. Show aromatic structure having 1, 2 and 3 rings with suitable example.

 [View Text Solution](#)

152. Give methods of preparation for benzene.

 [View Text Solution](#)

153. Draw the structure of compound having  $C_7H_8$  and give number of  $\sigma$  and  $\pi$  bonds.

 [View Text Solution](#)

154. Write about physical properties of benzene.

 [View Text Solution](#)

155. Which type of chemical reaction does given by arene compounds ?  
Give there suitable examples and reactions.

 [View Text Solution](#)

**156.** Give addition reactions of benzene with chemical reactions.

 [View Text Solution](#)

**157.** Give various oxidation reactions of benzene.

 [View Text Solution](#)

**158.** Write about nitration reaction of benzene.

 [View Text Solution](#)

**159.** Explain halogenation of benzene with example of chlorination.

 [View Text Solution](#)

**160.** Explain the bromination of benzene with its mechanism.

 [View Text Solution](#)

**161.** Give examples of Friedel-Craft's alkylation.

 [View Text Solution](#)

**162.** Which catalyst is used in Friedel-craft alkylation reaction ? And what is its function ?

 [View Text Solution](#)

**163.** Explain which type of mechanism is involved in alkylation of benzene ?

 [View Text Solution](#)

**164.** Which product is obtained when benzene is heated with  $CH_3Cl$  in presence of  $AlCl_3$ ? Why?

 [View Text Solution](#)

**165.** Explain the reaction of benzene with n-propyl chloride.

 [View Text Solution](#)

**166.** Mention main product of reaction of benzene with 1-chloropropane.

 [View Text Solution](#)

**167.** Give reaction of acylation of benzene and its mechanism.

 [View Text Solution](#)

168. Write the sulphonation reactions of benzene.

 [View Text Solution](#)

169. What is the electrophile in sulphonation reaction of benzene ? And how it is obtained ?

 [View Text Solution](#)

170. Write in brief about reaction steps of sulphonation reaction of benzene OR sulphonation mechanism.

 [View Text Solution](#)

171. Enumerate different aromatic electrophilic substitution reactions and give the reactions which shows how the electrophiles ( $E^+$ ) are formed.

 [View Text Solution](#)

172. Explain mechanism of first step of general electrophilic substitution reaction for benzene.

 [View Text Solution](#)

173. Explain second steps of general electrophilic substitution reaction of benzene.

 [View Text Solution](#)

174. Discuss step which involve liberation of proton from  $\sigma$ -complex.

 [View Text Solution](#)

175. Which are the various steps of electrophilic substitution of benzene ?

 [View Text Solution](#)

**176.** Explain position direction properties of groups in mono substituted benzene. With suitable examples.

 [View Text Solution](#)

**177.** What do you mean by ortho and para position directional groups ? Explain ortho and para position directional effect by taking examples of any group.

 [View Text Solution](#)

**178.** Explain why reactivity of benzene ring is increases due to presence of -OH group in phenol.

 [View Text Solution](#)



**179.** What is mean by meta directing group ? Give examples of it and explain meta directing effect of  $-NO_2$ .

 [View Text Solution](#)

**180.** What is mean by activator groups ? Explain with suitable examples.

 [View Text Solution](#)

**181.** What is mean by inactivators of groups ? Explain with suitable examples.

 [View Text Solution](#)

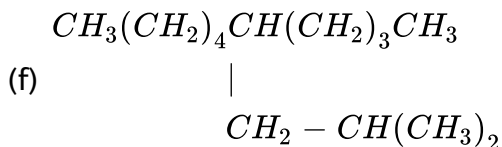
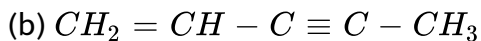
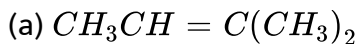
**182.** Why does benzene undergo electrophilic substitution reactions easily and nucleophilic substitution with difficulty ?

 [View Text Solution](#)

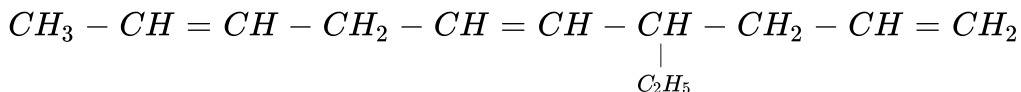
**183.** Write chemical equations for combustion reaction of the following hydrocarbons : (i) Butane (ii) Pentene (iii) Hexyne (iv) Toluene

 [View Text Solution](#)

**184.** Write IUPAC names of the following compounds :



(g)



 [View Text Solution](#)

**185.** How would you convert the following compounds into benzene ?

(i) Ethyne (ii) Ethene (iii) Hexane

 [View Text Solution](#)

**186.** Write down the products of ozonolysis of 1, 2-dimethylbenzene (o-xylene). How does the result support Kekule structure for benzene ?

 [View Text Solution](#)

**187.** Arrange benzene, n-hexane and ethyne in decreasing order of acidic behaviour. Also give reason for this behaviour.

 [View Text Solution](#)

**188.** Suggest the name of a Lewis acid other than anhydrous aluminium chloride which can be used during ethylation of benzene.

 [View Text Solution](#)

189. Explain why the following system are not aromatic ?



 [View Text Solution](#)

190. Out of benzene, m-dinitrobenzene and toluene which will undergo nitration most easily and why ?

 [View Text Solution](#)

191. Arrange the following set of compounds in order of their decreasing relative reactivity with an electrophile,  $E^+$

(a) Chlorobenzene, 2, 4-dinitrochlorobenzene, p-nitrochlorobenzene

(b) Toluene,  $p - H_3C - C_6H_4 - NO_2$ ,  $p - O_2N - C_6H_4 - NO_2$

 [View Text Solution](#)

**192.** How will you convert benzene into

(i) p-nitrobromobenzene (iii) p-nitrotoluene

(ii) m-nitrochlorobenzene (iv) acetophenone ?

 [View Text Solution](#)

**193.** Give chemical reaction for the following conversion :

 [View Text Solution](#)

**194.** Unknown organic metal oxide (A) heated with carbon will give compound (B), which on reaction with water gives ethyne. So what are the compounds A and B ?

 [View Text Solution](#)

**195.** Two compounds with molecular formula  $C_4H_6$  is available , if one of the compound can react with soda amide while second can't react with ti, then find out that organic compound ?

 [View Text Solution](#)

**196.** Give name and structure of aromatic compound with  $C_{10}H_8$  molecular formula. And give the number of  $\sigma$  and  $\pi$  bonds present in the structure.

 [View Text Solution](#)

**197.** Give name and structure of aromatic hydrocarbon with molecular formula  $C_{12}H_{10}$  which contain two benzene ring.

 [View Text Solution](#)

**198.** One of the aromatic compound X when heated with powder of Zn gives benzoic acid but on heated with sodalime gives phenol. So give the name of X compound.

 [View Text Solution](#)

**199.** One unknown compound X on hydrocarbon. Which on reaction with  $HgSO_4(H^+)$  gives compound (B). (B) on oxidation gives compound (C). (C) on reaction with NaOH and soda lime gives methane. So identify A, B and C by giving chemical reaction.

 [View Text Solution](#)

**200.** One unknown compound X on chlorination followed by wurtz reaction and dehydro halogenation gives ethene. So give whole reaction with stepwise manner.

 [View Text Solution](#)

**201.** Why is benzene extra ordinarily stable though it contains three double bonds ?

 [View Text Solution](#)

**202.** What are the necessary conditions for any system to be aromatic ?

 [View Text Solution](#)

**203.** What effect does branching of an alkane chain has on its boiling point ?

 [View Text Solution](#)

**204.** Discuss the formation of cancer causing poly nuclear hydrocarbon and also explain how they cause cancer ?

 [View Text Solution](#)



**205.** Give name and structure of cancer causing hydrocarbon.

 [View Text Solution](#)

**206.** Give difference.

 [View Text Solution](#)

**207.** Give the examples and name.

 [View Text Solution](#)

**208.** Write down effect of incomplete combustion of petrol in vehicles.

 [View Text Solution](#)

1. Write structures of different chain isomers of alkanes corresponding to the molecular formula  $C_6H_{14}$ . Also write their IUPAC names.

 [View Text Solution](#)

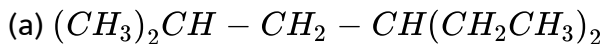
2. Give the IUPAC name and structure and the states of carbon in it ?

 [View Text Solution](#)

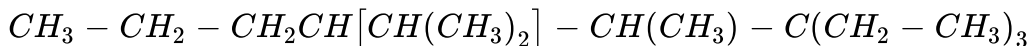
3. Write structures of different isomeric alkyl groups corresponding to the molecular formula  $C_5H_{11}$ . Write IUPAC names of alcohols obtained by attachment of -OH groups at different carbons of the chain.

 [View Text Solution](#)

4. Give the IUPAC nomenclature of following structures with its proper rule of IUPAC.



(b)

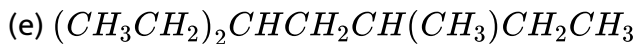
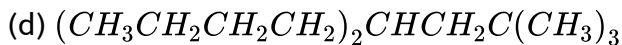


 [View Text Solution](#)

5. Sodium salt of which acid will be needed for the preparation of propane? Write chemical equation for the reaction?

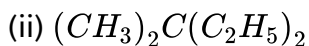
 [View Text Solution](#)

6. Write the IUPAC nomenclature of the following.



 [View Text Solution](#)

7. Give the nomenclature IUPAC of following :



(iii) Tetra-tert-butylmethane

 [View Text Solution](#)

8. Write structural formulas of the following compounds :

(i) 3,4,4,5-Tetramethylheptane

(ii) 2,5-Dimethylhexane

 [View Text Solution](#)

9. Write structure for each of the following compounds. Why are the given names incorrect ? Write correct IUPAC names.

(i) 2-Ethylpentane

(ii) 5-Ethyl-3-methylheptane

 [View Text Solution](#)

[View Text Solution](#)

10. Hydrocarbons (a)  $C_3H_6$  (b)  $C_4H_8$  (c)  $C_5H_{10}$  (d)  $C_6H_{12}$  formula write the unsaturated hydrocarbons formula and structures and forms ?

 [View Text Solution](#)

11. In the alkane  $H_3C - CH_2 - C(CH_3)_2 - CH_2 - CH(CH_3)_2$ , identify  $1^\circ$ ,  $2^\circ$ ,  $3^\circ$  carbon atoms and give the number of H atoms bonded to each one of these.

 [View Text Solution](#)

12. Sodium salt of which acid will be needed for the preparation of propane ? Write chemical equation for the reaction ?

 [View Text Solution](#)

13. Can methane be obtained by the Kolbe's electrolysis? Why?

 [View Text Solution](#)

14. Give the difference between decarboxylation and electrolysis of sodium propanoate (or propanoic acid)?

 [View Text Solution](#)

15. Write the reduction reaction and Wurtz reaction of 1-chloropropane?

 [View Text Solution](#)

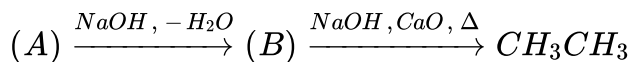
16. (i)  $CH_3COOH$  (ii)  $C_2H_5COOH$  (iii)  $C_3H_7COOH$  (iv)  $C_6H_5COOH$  are heated with sodalime, there is decarboxylation. They are heated in different test-tubes with sodalime, write the reactions occurred in different test-tubes.

 [View Text Solution](#)

17. Complete combustion of  $C_4H_{10}$ ,  $CO_2$  is a by product. Where  $C_4H_{10}$  has its isomers on oxidation it gives alcohol as by product. Give reaction and explain them ?

 [View Text Solution](#)

18. In below reaction give the names and structures of A and B.



 [View Text Solution](#)

19. One compound reaction with  $Cl_2$ , gives product B and product B on (Zn + dil. HCl) treated then we get our compound back A. Give the structure of A and B.

 [View Text Solution](#)

20. Give the names structure and preparation of 6 membered cyclic ring structure  $C_6H_{12}$ ,  $C_6H_6$  and  $C_7H_8$ .

 [View Text Solution](#)

21. Give the molecular formula, structural formula full structure and line structure of (i) 2-Methyl-pentane (ii) 3-Ethylpentane and (iii) 2,3-dimethyl butane.

 [View Text Solution](#)

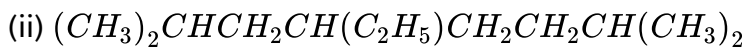
22. There are isomers. Identify them and give the forms of isomerization.

 [View Text Solution](#)

23. Give the IUPAC nomenclature.

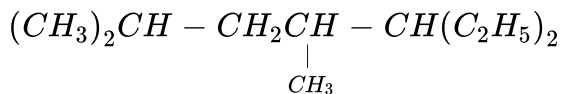
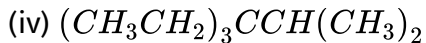
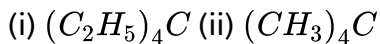
(i)  $CH_3CH_2C(CH_3)(CH_2CH_3)CH_2CH(CH_3)_2$





 [View Text Solution](#)

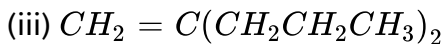
24. Give the structure IUPAC name.



 [View Text Solution](#)

25. Write IUPAC names of the following compounds :





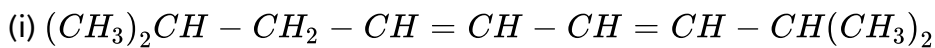
[View Text Solution](#)

26. In given structure, give the no of  $\sigma$  and  $\pi$  bond ?

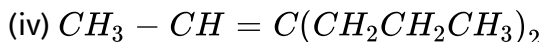
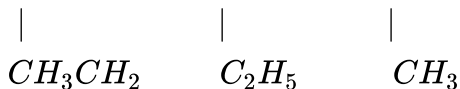


[View Text Solution](#)

27. Give the IUPAC names :



(iii)

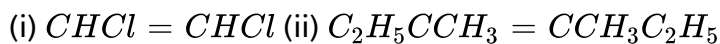


[View Text Solution](#)

28. Write structures and IUPAC names of different structural isomers of alkenes corresponding to  $C_5H_{10}$

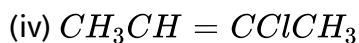
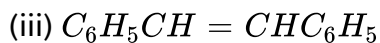
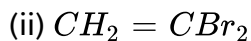
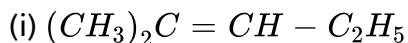
 [View Text Solution](#)

29. Draw cis and trans isomers of the following compounds. Also write their IUPAC names :



 [View Text Solution](#)

30. Which of the following compounds will show cis-trans isomerism ?





[View Text Solution](#)

31. Draw the cis and trans structures of hex-2-ene. Which isomer will have higher b.p. and why ?



[View Text Solution](#)

32. From the given structure whose cis and trans isomers are there ?

(i)  $CH_3CH = CH_2$  (ii)  $(CH_3)CH = CH_2$



(v) 3-Methyl-but-2-ene-1-ol

(vi) 2, 3-Dimethyl-but-2-ene



[View Text Solution](#)

33. Explain : 2-butene has 2-isomers ?



[View Text Solution](#)

**34.** From cis and Trans-2-butene, which one is stable? Explain ?

 [View Text Solution](#)

**35.** Write IUPAC names of the products obtained by addition reaction of HBr to hex-1-ene

- (i) in the absence of peroxide and
- (ii) in the presence of peroxide.

 [View Text Solution](#)

**36.** Write IUPAC names of the products by the ozonolysis of the following compounds :

- (i) Pent-2-ene
- (ii) 3,4-Dimethylhept-3-ene
- (iii) 2-Ethylbut-1-ene
- (iv) 1-Phenylbut-1-ene

 [View Text Solution](#)

37. An alkene 'A' on ozonolysis gives a mixture of ethanal and pentan-3-one. Write structure and IUPAC name of 'A'.

 [View Text Solution](#)

38. An alkene 'A' contains three C-C, eight C-H  $\sigma$  bonds and one C-C  $\pi$ -bond. 'A' on ozonolysis gives two moles of an aldehyde of molar mass 44u. Write IUPAC name of 'A'.

 [View Text Solution](#)

39. Propanal and pentane-3-one are the ozonolysis products of an alkene ? What is the structural formula of the alkene ?

 [View Text Solution](#)

**40.** Write structures of all the alkenes which on hydrogenation give 2-methylbutane.

 [View Text Solution](#)

**41.** Give the IUPAC name on ozonolysis of following :

- (i) 3,4-Dimethyl hept-3-ene
- (ii) 2-Methyl-but-2-ene
- (iii) 2-Ethyl-2-methyl-pent-2-ene
- (iv) Hex-1-ene
- (v) Hex-3-ene

 [View Text Solution](#)

**42.** Give the IUPAC name of alkene, product obtained on ozonolysis.

- (i) 2 molar propanone (Acetone)
- (ii) Ethanal and propanal
- (iii) Ethanal and pentane-3-one

(iv) Ethanal and butanal

(v) Propanone and butane-2-one

 [View Text Solution](#)

**43.** One carbonyl hydrocarbon (X) on addition of  $H_2$  gas addition product on ozonolysis of 'X' gives (i) Ethanal (ii) Propanone and (iii) Butane-1, 4-diol. Give the structure of 'X' and IUPAC name.

 [View Text Solution](#)

**44.** Ozonolysis of hydrocarbon containing two double bond, ethanal, propanone and glycol is formed. Give the structure of hydrocarbon ?

 [View Text Solution](#)

**45.** Give the name of unsaturated hydrocarbon gives the product 2 moles methanal and 1 mole glyoxal, Give the structure and IUPAC name.



 [View Text Solution](#)

46. One reactant X on ozonolysis gives 2-product. In which molecular weight =  $72\mu$ , in structure 16 C-H  $\sigma$  bond, 7C - C $\sigma$  bond and 1 $\pi$  bond is there.

 [View Text Solution](#)

47. One hydrocarbon X in presence of Pd, n-butane is formed on hydrogenation. X treated with acidic  $KMnO_4$ , on oxidation carboxylic acid is formed of 2 carbon product. Give the structure of X and IUPAC name ?

 [View Text Solution](#)

48. Hydrogenation is done of hydrogen A of unsaturated hydrocarbon on addition of  $H_2$ . Ozonolysis of A gives acetone, acetaldehyde and propane-1, 3-diol. Give the structure and name of X ?



[View Text Solution](#)

49. Give the names, structure of the isomers of 4<sup>th</sup> member of alkene.



[View Text Solution](#)

50. Give the name and structure of functional isomers of  $C_4H_8$ .



[View Text Solution](#)

51. Write structure of different isomers corresponding to the 5<sup>th</sup> member of alkyne serie. Also awrite IUPAC names of all the isomers. What type of isomerism is exhibited by different pairs of isomers ?



[View Text Solution](#)

52. Alkyne  $C_3H_4$  and  $C_4H_6$  forms which type of alkene isomers ? Give their structure.

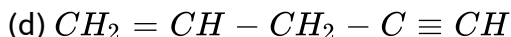
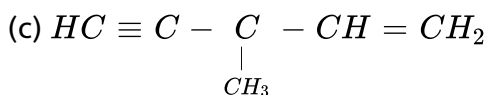
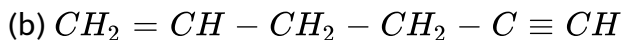
 [View Text Solution](#)

53. Write isotopes of alkaline  $C_4H_8$  and give one examples of it.

 [View Text Solution](#)

54. Give the IUPAC name for the following structures.

(a) 



 [View Text Solution](#)

55. How will you convert ethanoic acid into benzene ?

 [View Text Solution](#)

## Section B Objective Questions Short Questions

1. Give reaction for the formation of butane from ethane.

 [View Text Solution](#)

2. Give conversion reaction for methane  $\rightarrow$  ethane.

 [View Text Solution](#)

3. Arrange the following in increasing order of boiling point.

(i) methane, butane, propane, pentane, ethane.

(ii) n-pentane, neo-pentane, iso-pentane.

(iii) ethane, 2-methyl propane, propane, n-butane.

(iv) 2methyl pentane, 2,2-dimethyl butane, 2,2-dimethyl propane.

 [View Text Solution](#)

4. What do you mean by dihedral angle or torsional angle ?

 [View Text Solution](#)

5. Define torsional strain.

 [View Text Solution](#)

6. How can you define skew conformation ?

 [View Text Solution](#)

7. State the formaton of difference angles observed in H-C-H of ethane ?



[View Text Solution](#)

8. Classify the following compounds in saturated, unsaturated and aromatic hydrocarbon. Ethane, Ethene, Ethyne, Propene, Propane, Benzene, Toluene, Anthracene, Cyclopropane.



[View Text Solution](#)

9. Give isotopes and their names of  $C_3H_6$ .



[View Text Solution](#)

10. Which type of isotops of  $C_4H_8$  are possible ? Give their names and structure.



[View Text Solution](#)

11. Give bond angle and bond length of methane ?

 [View Text Solution](#)

12. Methane is tetrahedral but not square planar in nature, prove it.

 [View Text Solution](#)

13. Which type of hydrogen is possessed by  $(CH_3)_3C$  ?



 [View Text Solution](#)

14. One saturated hydrocarbon possess two carbon and it has same type of Hydrogen atoms, so give the structure and type of hydrogen.

 [View Text Solution](#)

15. Explain why quaternary carbon is possible but quaternary hydrogen is not possible ?

 [View Text Solution](#)

16. Give structure is neo-pentile group.

 [View Text Solution](#)

17. Give structure of secondary and tertiary butyl.

 [View Text Solution](#)

18. Give the structure of isobutyl, isopropyl and isopentyl.

 [View Text Solution](#)



19. Give the structure of chain isomers and their names of  $C_6H_{14}$  molecular formula and has only methyl group.

 [View Text Solution](#)

20. Give the structure of chain isomers and their IUPAC names of  $C_6H_{14}$  molecular formula and has two methyl group.

 [View Text Solution](#)

21. Give IUPAC names of  $(CH_3)_3CH(C_2H_5)_2$ .

 [View Text Solution](#)

22. Give IUPAC names of  $(CH_3)_3CCH(C_2H_5)_2$ . Why 3-methyl-4,4-dimethyl pentane is not true ?

 [View Text Solution](#)

23. Explain - Why 2,2-dimethyl-3-ethyl pentane is not true name of  $(CH_3)_3CCH(C_2H_5)$ .

 [View Text Solution](#)

24. What is hydration reaction ?

 [View Text Solution](#)

25. Among  $CH_3F$ ,  $CH_3Cl$ ,  $CH_3Br$  and  $CH_3I$  which does not give methane on reduction ?

 [View Text Solution](#)

26. Which of the following is not true for (i)  $Zn +$  dilute HCl and (ii)  $Zn +$  concentrated HCl ?

 [View Text Solution](#)

 [View Text Solution](#)

27. In which of the following reaction carbon number does not change on product formation ?

- (i) Hydrogenation (ii) Alkyl halide reduction
- (iii) Wurtz reaction (iv) Decarboxylation
- (v) Kolbe reaction

 [View Text Solution](#)

28. Which of the following reaction is used to prepare hydrocarbon with even number of carbon ?

- (i) Wurtz reaction
- (ii) Decarboxylation reaction
- (iii) Kolbe's electrolysis
- (iv) Reduction (v) Hydrogenation

 [View Text Solution](#)

29. Give hydrolysis reaction of  $C_2H_5COO^- Na^+$  occur on the anode.

 [View Text Solution](#)

30. Give reaction occur of cathode during electrolysis of  $C_2H_5COO^- Na^+$ .

 [View Text Solution](#)

31. Which type of reaction is occur in Kolbe's electrolysis ? Why ?

 [View Text Solution](#)

32. Which free radicals are obtained on anode and cathode during electrolysis of  $RCOO^- Na^+$  in Kolbe's electrolysis ?

 [View Text Solution](#)

**33.** What effect does branching of an alkane chain has on its boiling point ?

 [View Text Solution](#)

**34.** Give uses of alkane.

 [View Text Solution](#)

**35.** Explain dry-cleaning of clothes or explain grease stains can be removed by petrol.

 [View Text Solution](#)

**36.** Why alkane is known as "Paraffin" ?

 [View Text Solution](#)

37. Which reactions are difficult for alkane ?

 [View Text Solution](#)

38. How do you account for the formation of ethane during chlorination of methane ?

 [View Text Solution](#)

39. Why alkane is used as fuel ?

 [View Text Solution](#)

40. Give the name and use of compound produced during incomplete combustion of alkane.

 [View Text Solution](#)

41. Give the different stages name of chlorination of methane.

 [View Text Solution](#)

42. Give decreasing rate order for the halogenation reaction of alkyl compounds.

 [View Text Solution](#)

43. Give the order for the substitution of hydrogen atoms in alkane compounds.

 [View Text Solution](#)

44. Which product is formed on chlorination of  $(CH_3)_3CH$  ? Also give comparison of their composition.

 [View Text Solution](#)

**45.** Give reason : Why fluorination of alkane is not easier ?

 [View Text Solution](#)

**46.** Why direct iodination is not possible ?

 [View Text Solution](#)

**47.** How to perform iodination of alkane ? Explain with suitable example.

 [View Text Solution](#)

**48.** What is isomerism? Why ?

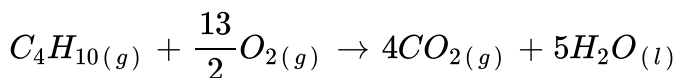
 [View Text Solution](#)



49. What is the difference among complete combustion, incomplete combustion and combustion of alkane ?

 [View Text Solution](#)

50. "Alkane compound resist the oxidation", so what is your opinion for the following reaction ?



 [View Text Solution](#)

51. "Alkane compounds normally resist the oxidation", what it mean ?

 [View Text Solution](#)

52. Which type of reaction can be performed on reaction of  $(CH_3)_3CH$  with  $KMnO_4$  ? Why ?

 [View Text Solution](#)

53. The product of one reaction at 773 K temperature is ( $C_7H_{16} + C_5H_{10}$ ). So give the molecular formula and type of reaction.

 [View Text Solution](#)

54. Combustion of alkane (Petrol) causes pollution how ?

 [View Text Solution](#)

55. Give incomplete combustion reaction of methane, heptane and nonane.

 [View Text Solution](#)

56. (i) Give reaction for bromination of ethane.

(ii) Is this reaction suitable for pure bromoethane ? Why ?

(iii) Give the name of mechanism of reaction and name of stages occurred in reaction.

(iv) Give reaction for first stage.

(v) Which type of bond cleavage occurred in first stage ?

 [View Text Solution](#)

57. Which types of bond exist between two carbon of alkene ?

 [View Text Solution](#)

58. What are the enthalpies of  $\sigma$ -bond and  $\pi$ -bonds in alkene?

 [View Text Solution](#)

59. Give bond enthalpies and bond length between carbon and carbon of alkane ?

 [View Text Solution](#)

60. Which one is more reactive between alkane and alkene ? Why?

 [View Text Solution](#)

61. Which bond is stronger between single bond of C-C of alkane and double bond C=C of alkene ?

 [View Text Solution](#)

62. Which type of reactions are easily performed by alkane and alkene ?

 [View Text Solution](#)

63. Which orbitals on overlapping will form  $\sigma$  and  $\pi$ -bond in C=C of alkene ? Explain.

 [View Text Solution](#)

64. Which type of hybridization found in C-C single bond of alkane and C=C bond of alkene ?

 [View Text Solution](#)

65. What do you mean by strength and reactivity of bond ?

 [View Text Solution](#)

66. How to decide the chemical reactivity of compound ? Give example.

 [View Text Solution](#)

67. What is Lindlar's catalyst ? Write its uses.

 [View Text Solution](#)

68. Which reactant is used to prepare trans alkene from alkyne ?

 [View Text Solution](#)

69. What do you mean by dehydrohalogenation ?

 [View Text Solution](#)

70. What is vicinal dihalides ? Give examples.

 [View Text Solution](#)

71. Which compound gives  $\beta$ -elimination reactions ? What are their main product ?

 [View Text Solution](#)

72. Give the differential reaction for butane and butane and give the reaction.

 [View Text Solution](#)

73. Name the distinguishing reaction of alkane from alkene.

 [View Text Solution](#)

74. What is the difference in reaction of alkene with HBr in presence of peroxide and in absence of peroxide ?

 [View Text Solution](#)

75. Arrange HI, HCl, HBr and HF in increasing order of rate of reaction with alkene.

 [View Text Solution](#)

76. Which reactants are used to prepared cis and trans alkenes from alkynes ?

 [View Text Solution](#)

77. What is dehydrohalogenation ?

 [View Text Solution](#)

78. Name the reaction, heating of 1,2-dibromoethane with zinc powder ?

 [View Text Solution](#)



79. Give common formula of alkyl group.

 [View Text Solution](#)

80. Give the name of dehydrohalogenation and dehydration of alcohol compound in presence of acid.

 [View Text Solution](#)

81. Which different type of reaction mechanism is observed in addition reaction ?

 [View Text Solution](#)

82. Why  $CCl_4$  is added in bromination of alkene ?

 [View Text Solution](#)

83. What is known as asymmetrical alkene ? Give examples.

 [View Text Solution](#)

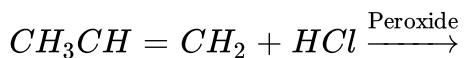
84. Which reaction is known as Kharash reaction ?

 [View Text Solution](#)

85. Among HCl, HBr and HI which reactant gives Kharash reaction with alkene ?

 [View Text Solution](#)

86. Explain product of reaction



 [View Text Solution](#)

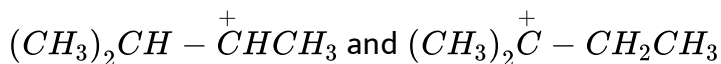
87. Give the order of bond strength of H-Cl-H-Br, H-I.

 [View Text Solution](#)

88. What is the product obtained from the HCl, HBr and HI in presence of peroxide ?

 [View Text Solution](#)

89. Which of the following carbocation is most stable ?



 [View Text Solution](#)

90. Give homolysis reaction of  $(C_6H_5CO)_2O - O$ .

 [View Text Solution](#)

91. On attachment of H and Br from the HBr to  $C_6H_5$  free radical what can be formed ?

 [View Text Solution](#)

92. What will be the change in boiling point of alkene compound on addition of each  $-CH_2$  group ?

 [View Text Solution](#)

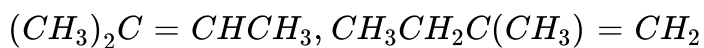
93. Which type of rate is observed in dehydrohalgenation ( $\beta$ -elimination) reaction of alkyl halide ?

 [View Text Solution](#)

94. Give order of stability for different alkenes.

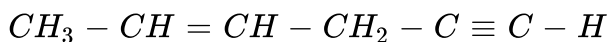
 [View Text Solution](#)

95. Give increasing order for stability of alkene ( $\Delta H^\circ$ ).



 [View Text Solution](#)

96. Give hybridization of carbon from the following :



 [View Text Solution](#)

97. Give number of  $\sigma$  and  $\pi$  bonds in above compounds of questions (i).

 [View Text Solution](#)

98. Give IUPAC name of above compound.

 [View Text Solution](#)

99. Draw the geometrical isomers of above compound.

 [View Text Solution](#)

100. Why cis and trans isomers are not possible in alkyne ?

 [View Text Solution](#)

101. Which bond possess more bond length between  $C=C$  and  $C \equiv C$  ?

 [View Text Solution](#)

102. What is bond length of  $\begin{array}{c} | \\ -C- \\ | \end{array} - \begin{array}{c} | \\ -C- \\ | \end{array} - \img alt="file icon" data-bbox="548 763 578 783"/> and  $-C \equiv C -$  ?$

 [View Text Solution](#)

103. What will be effect on bond length as bond multiplicity increases ?

 [View Text Solution](#)

104. What is the relation between reactivity of compound, bond strength and bond order between two carbon atoms ?

 [View Text Solution](#)

105. What is the rate of reaction with  $Cl_2$ ,  $Br_2$  and  $I_2$  with  $CH_2 \equiv CH_2$ .

 [View Text Solution](#)

106. What is the difference between 2-butyne and 1-butyne ? By which test we can distinguish between these two ?

 [View Text Solution](#)

107. Which real product is obtained on hydrolysis of alkyne? Why?

 [View Text Solution](#)

108. Give the structure and IUPAC name :

(a) Vinyl chloride (b) Vinyl cyanide

(c) Glyoxal (d) Silver acetylide

(e) Diacetyl (f) Glycol

 [View Text Solution](#)

109. Give the isomers of aromatic hydrocarbon having molecular formula of

$C_8H_{10}$ .

 [View Text Solution](#)



110. Is given structure are of benzene ?



 [View Text Solution](#)

111. What type of difference is observed in hybridization of carbon of benzene during nitration and formaiton of 6 complex ?

 [View Text Solution](#)

112. Which type of reaction occurred between  $H_2SO_4 - HNO_3$  in nitration ?

 [View Text Solution](#)

113. Why m-dinitrobenzene is obtained from  $C_6H_5NO_2$  ?

 [View Text Solution](#)

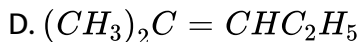
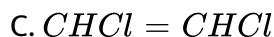
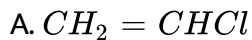
114. Give reason : Nitration of benzene is not possible with only  $HNO_3$ .

 [View Text Solution](#)

115. Which products are obtained on reaction of but-1-ene with HBr in presence of peroxide ?

 [View Text Solution](#)

116. Which of the following shows geometrical isomers ?



**Answer: C**



[View Text Solution](#)

117. Which of the following has activation effect on benzene ring ?

$-OH$ ,  $-COCH_3$ ,  $-NO_2$ ,  $-NH_2$ ,  $-Cl$ ,  $-Br$ ,  $-NHCOCCH_3$ ,  $-CO$



[View Text Solution](#)

118. Which of the above group has deactivator groups ?



[View Text Solution](#)

119. Arrange the following group in increasing order of nitration reaction

:

$C_6H_6$ ,  $H_6H_5Cl$ ,  $C_6H_5COOH$ ,  $C_6H_5NH_2$



[View Text Solution](#)

120. Arrange the following compounds in decreasing order of their reactivity order with  $E^+$  :



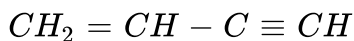
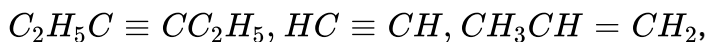
 [View Text Solution](#)

121. Arrange the following compounds in decreasing order of acidic character of CH.  $CH_2 = CH_2$ ,  $CH_3 - CH_3$ ,  $C_6H_6$ ,  $CH \equiv CH$

 [View Text Solution](#)

122. Which of the following compound does not react with  $NaNH_2$  ?

Why ?



 [View Text Solution](#)

123. Which of the following group possess m-directional effect ?

$-OH$ ,  $-OCH_3$ ,  $-Cl$ ,  $-NO_2$ ,  $-COOH$ ,  $-NHCOCH_3$ ,  $-SO_3H$ ,

 [View Text Solution](#)

124. All ortho and para directional group are activator ? Give examples.

 [View Text Solution](#)

125. Give nitration products of toluene and benzoic acid ?

 [View Text Solution](#)

126. Give bond length between C-C of ethane, ethene, ethyne and benzene.

 [View Text Solution](#)

127. What is the hybridization of carbon in above compounds ?

 [View Text Solution](#)

128. Give shape and bond angle of the compounds of questions.

 [View Text Solution](#)

129. What is the shape of  $\pi$ -electron cloud in ethene and benzene ?

 [View Text Solution](#)

130. Ethene, ethyne and benzene gives electrophilic reactions, why ? Give reasons.

 [View Text Solution](#)

**131.** Alkene and alkyne gives electrophilic addition reaction, while benzene gives electrophilic substitution reaction. Give reason.

 [View Text Solution](#)

**132.** Which orbitals are involved in bond overlapping of each carbon in benzene ?

 [View Text Solution](#)

**133.** Which are the cancer causing compounds ?

 [View Text Solution](#)

**134.** Give conversion reaction of benzene in the following products :

(i) Nitrobenzene (ii) Chlorobenzene

(iii) Bromobenzene

(iv) Benzene sulphonic acid (v) Toluene

(vi) Ethyl benzene and (vii) Acetophenone

 [View Text Solution](#)

**135.** Give resonance structures of following :

(i) Phenol (ii) Nitrobenzene

 [View Text Solution](#)

**136.** Give chemical reactions for the following :

 [View Text Solution](#)

**137.** Give structures of following :

(i) Glycol (ii) Glyoxal

(iii) Ethanal and Ethanol

(iv) Propanal, Propanol and Propanone



(v) Gem-dibromide (Two)

(vi) Vicinal dibromide (Two)

 [View Text Solution](#)

**138.** Give ozonized structure for following :

(i) Propene (ii) Ethene (iii) 1-butene

(iv) 2-butene (v) Benzene (vi) Buta-1,3-diene

 [View Text Solution](#)

**139.** Give stability order of carbocations :

(i)  $(CH_3)_3\overset{+}{C}$ ,  $(CH_3)_2\overset{+}{C}H$ ,  $CH_3\overset{+}{C}H_2$ ,  $\overset{+}{C}H_3$

 [View Text Solution](#)

**140.**  $CH_3CH_2\overset{+}{C}HCH_3$ ,  $CH_3CH_2CH_2\overset{+}{C}H_2$

$CH_3 - \underset{\substack{| \\ CH_3}}{CH}CH_2\overset{+}{C}H_2$ ,  $CH_3 - \underset{\substack{| \\ CH_3}}{C}\overset{+}{C}H_2CH_3$



[View Text Solution](#)

141. Give chemical formula, name and structure of gamexene.



[View Text Solution](#)

142. Give structure and formula of hexachloro benzene.



[View Text Solution](#)

143. Give chemical formula and structure of acetophenone.



[View Text Solution](#)

144. How many  $\sigma$  and  $\pi$  bonds are present in acetophenone ?



[View Text Solution](#)

145. Give structure of nitro and sulphonic acid group.

 [View Text Solution](#)

146. Bromination of phenol gives tribromophenol while bromination of nitrobenzene gives only one bromonitrobenzene, why?

 [View Text Solution](#)

147. Give name of 4 compounds of polymerized substance. And give their polymer name.

 [View Text Solution](#)

## Section B Fill In The Blanks

1. Stronger deactivator group is .....

 [View Text Solution](#)

2. Highest acidic hydrogen possessing group among  $C_2H_2$ ,  $C_2H_4$ ,  $C_2H_6$  and  $C_2H_6$  is .....

 [View Text Solution](#)

3. ....product obtained from the chlorination of benzene sulphonic acid in presence of  $FeCl_3$ .

 [View Text Solution](#)

4.  $(CH_3)CHCH_2 -$  and  $CH_3CH_2CH_2$  have same .... and .... respectively.

 [View Text Solution](#)

5.  $CH_3CH_2CH_2\overset{+}{C}H_2$  and  $CH_3 - \overset{+}{C}HCH_2$  is ..... and ..... Is more stable.

 [View Text Solution](#)

6. .... charge produce in phenol ring by resonance but due to resonance in nitrobenzene ..... charge is produce on ring.

 [View Text Solution](#)

7.  $Br^+$ ,  $N^+H_4$  and  $N^+O_2$  all three possess positive charge, ..... is not electrophilic in nature.

 [View Text Solution](#)

8. According to anti Markovnikov,  $CH_3CH = CH_2$  is react with HBr in presence of .....

 [View Text Solution](#)

9. The sigma bond formed between two carbon of ethene is result of overlapping of ..... hybridized orbital.

 [View Text Solution](#)

10. If  $C_4H_8$  is not alkene then this compound is .....

 [View Text Solution](#)

11. Weakest acid among  $CH_3COOH$ ,  $CH_2ClCOOH$ ,  $CHCl_2COOH$  is .....

 [View Text Solution](#)

12. Benzene gives ..... type of reaction easily.

 [View Text Solution](#)

## Section B State True Or False For The Following Statements

1. Benzene is aromatic because .....

(i) it has six carbon.

(ii) all carbon has  $sp^2$  hybridization.

(iii) it has three C=C.

(iv) it has more proportion of carbon and less proportion of hydrogen.

(v) it is planar in nature.

 [View Text Solution](#)

2. What is true and false for the ethene from the following ?

(i) Ethene molecule is three dimensional

(ii) Ethene is planar

(iii) Ethene has four hydrogen

(iv) Ethene has sp carbon.



[View Text Solution](#)

3. Ozonization of propene gives .....

- (i) ethanol and methanal
- (ii) ethanol and methanol.
- (iii) hybridization of carbon is change.
- (iv) propene gives monotriozoneid.



[View Text Solution](#)

4. In propyne .....

- (i)  $sp$  hybridization in two carbon atoms.
- all carbon has  $sp$  hybridization.
- (iii) one carbon has  $sp^3$  hybridization.
- (iv) all C-H bonds are of  $\sigma$  type.



[View Text Solution](#)



5. In resonance structure of phenol.....

- (i) lone pair of electron of oxygen atom of -OH group is transferred to benzene ring.
- (ii) it gives resonance structures having lone pair of electrons in second, fourth and sixth position of -OH group.
- (iii) structure with negative charge & 1 electron pair on third position of -OH group.
- (iv) phenol becomes polar.



[View Text Solution](#)

6. Electrophilic substitution reaction of benzene.....

- (i)  $\overset{+}{N}O_2$  electrophile in nitration but  $SO_3$  in sulphonation.
- (ii) Cl is electrophile in chlorination.
- (iii) Br is electrophile in bromination
- (iv)  $R^+$  is electrophile in FC alkylation.



[View Text Solution](#)

7. For isomerism.....

(i) Geometrical isomers are possible for  $\text{CHCl}=\text{CHCl}$ .

(ii)  $\text{CH}_2 = \text{CHCl}$  has two isomers.

(iii)  $\text{C}_6\text{H}_4\text{Cl}_2$  has three isomers.

(iv) No isomers for chlorobenzene.



[View Text Solution](#)

8. For reaction of (Propene + HBr)....

(i) 2-bromopropane is obtained on reaction of HBr with propene.

(ii) 2-bromopropane is obtained as main product on reaction of HBr with propene in presence of peroxides.

(iii) 1-bromopropane is obtained as main product on reaction of HBr with propene in presence of peroxides.

(iv) Propene does not react with propene.



[View Text Solution](#)

9. For benzene.....

- (i) Benzene does not give addition reaction.
- (ii) Benzene gives characteristic electrophilic substitution reaction.
- (iii) Benzene is planar molecule.
- (iv) There is no double bond or single bond present in benzene.



[View Text Solution](#)

10. For types of reaction mechanism....

- (i) reaction of propene with HBr in presence of peroxide is not a type of free radical addition reaction.
- (ii) chlorination of methane in presence of sunlight is a kind of free radical substitution reaction.
- (iv) dehydration of propanol is a kind of  $\beta$ -elimination reaction.



[View Text Solution](#)

11. Find out true (T) and false (F) for the following statements.

(i) Propane ,2-diol is obtained as a oxidized product in bayer's test of propene.

(ii) Ethanal is obtained as reduced product in ozonolysis of propene.

(iii) Tertiary butyl alcohol is obtained on oxidation of 2-methyl propane by  $KMnO_4$ .

(iv) Oxidation is not possible for alkane like 2-methyl propane.



[View Text Solution](#)

## Section B Assertion And Reason Type Questions

1. Statement (S) : Nitration of toluene is occur on ortho and para position.

Reason (R) :  $-CH_3$  group in toluene is ortho and para directing in nature.

A. Both statement (S) and Reasons (R) are true. And (R) gives complete explanation of (S).

- B. Both statement (S) and Reasons (R) are true. But (R) does not gives complete explanation of (S).
- C. Both statement (S) and Reason (R) are wrong
- D. Statement (S) is wrong and reason (R) is right

**Answer: A**

 [View Text Solution](#)

2. Statement (S) : For nitration of chlorobenzene more heating is required in comparision of benzene.

Reason (R) : -Cl groups is deactivator in chloro-benzene.

- A. Both statement (S) and Reasons (R) are true. And (R) gives complete explanation of (S).
- B. Both statement (S) and Reasons (R) are true. But (R) does not gives complete explanation of (S).
- C. Both statement (S) and Reason (R) are wrong

D. Statement (S) is wrong and reason (R) is right

**Answer: A**

 [View Text Solution](#)

3. Statement (S) : For chlorination of benzene  $FeCl_3$  is also required along with  $Cl_2$ .

Reason (R) : Chlorination is carried out by Cl of  $FeCl_3$ .

- A. Both statement (S) and Reasons (R) are true. And (R) gives complete explanation of (S).
- B. Both statement (S) and Reasons (R) are true. But (R) does not gives complete explanation of (S).
- C. Both statement (S) and Reason (R) are wrong
- D. Statement (S) is right and Reason (R) is wrong

**Answer: D**



[View Text Solution](#)

4. Statement (S) : Both -OH and  $-NH_2$  are m-directing in nature.

Reason (R) : Both -OH and  $-NH_2$  donate their lone pair electrons to the benzene ring in resonance.

- A. Both statement (S) and Reasons (R) are true. And (R) gives complete explanation of (S).
- B. Both statement (S) and Reasons (R) are true. But (R) does not gives complete explanation of (S).
- C. Both statement (S) and Reason (R) are wrong
- D. Statement (S) is wrong and reason (R) is right

**Answer: D**



[View Text Solution](#)

5. Statement (S) : Chlorination of toluene gives mixtures of ortho and para chloro toluene.

Reason (R) :  $-CH_3$  group is present in toluene.

A. Both statement (S) and Reasons (R) are true. And (R) gives complete explanation of (S).

B. Both statement (S) and Reasons (R) are true. But (R) does not give complete explanation of (S).

C. Both statement (S) and Reason (R) are wrong

D. Statement (S) is wrong and reason (R) is right

**Answer: B**



[View Text Solution](#)

6. Statement (S) :  $-CH_3$  group possess ortho and para directing effect.

Reason (R) :  $-CH_3$  group donate its electro pair and negative charge on



ortho and para position.

- A. Both statement (S) and Reasons (R) are true. And (R) gives complete explanation of (S).
- B. Both statement (S) and Reasons (R) are true. But (R) does not gives complete explanation of (S).
- C. Both statement (S) and Reason (R) are wrong
- D. Statement (S) is wrong and reason (R) is right

**Answer: A**



[View Text Solution](#)

7. Statement (S) : Substitution reactions of benzene is quite difficult with respect to addition reaction.

Reason (R) : Addition products does not possess resonating stability and aromatic.

- A. Both statement (S) and Reasons (R) are true. And (R) gives complete explanation of (S).
- B. Both statement (S) and Reasons (R) are true. But (R) does not gives complete explanation of (S).
- C. Both statement (S) and Reason (R) are wrong
- D. Statement (S) is wrong and reason (R) is right

**Answer: A**



[View Text Solution](#)

8. Statement (S) : Electrophilic substitution reaction of benzene is very difficult.

Reason (R) : Delocalized  $3\pi$  electron clouds are present in benzene ring.

- A. Both statement (S) and Reasons (R) are true. And (R) gives complete explanation of (S).

- B. Both statement (S) and Reasons (R) are true. But (R) does not gives complete explanation of (S).
- C. Both statement (S) and Reason (R) are wrong
- D. Statement (S) is wrong and reason (R) is right

**Answer: B**

 [View Text Solution](#)

9. Statement (S) : Ethene can perform electrophilic reactions easily with respect to ethane.

Reason (R) : There is no  $\pi$ - electron in ethane.

- A. Both statement (S) and Reasons (R) are true. And (R) gives complete explanation of (S).
- B. Both statement (S) and Reasons (R) are true. But (R) does not gives complete explanation of (S).
- C. Both statement (S) and Reason (R) are wrong

D. Statement (S) is wrong and reason (R) is right

**Answer: B**

 [View Text Solution](#)

**10.** Statement (S) : For chlorination of methane constant ultraviolet rays are required.

Reason (R) : In termination step of reaction mechanism free radicals are attached.

A. Both statement (S) and Reasons (R) are true. And (R) gives complete explanation of (S).

B. Both statement (S) and Reasons (R) are true. But (R) does not gives complete explanation of (S).

C. Both statement (S) and Reason (R) are wrong

D. Statement (S) is wrong and reason (R) is right

**Answer: A**



[View Text Solution](#)

**11. Statement (S) :** Isomers are not possible for ethane.

**Reason (R) :** There is a double bond between two carbon atom.

- A. Both statement (S) and Reasons (R) are true. And (R) gives complete explanation of (S).
- B. Both statement (S) and Reasons (R) are true. But (R) does not gives complete explanation of (S).
- C. Both statement (S) and Reason (R) are wrong
- D. Statement (S) is wrong and reason (R) is right

**Answer: C**



[View Text Solution](#)

12. Statement (S) : Trans ethane is more stable than cis ethane.

Reasons (R) : Distortion is present in ethane but it is not present in trans.

- A. Both statement (S) and Reasons (R) are true. And (R) gives complete explanation of (S).
- B. Both statement (S) and Reasons (R) are true. But (R) does not gives complete explanation of (S).
- C. Both statement (S) and Reason (R) are wrong
- D. Statement (S) is wrong and reason (R) is right

**Answer: A**



[View Text Solution](#)

13. Statement (S) : There is no geometrical isomers for  $CH_2 = CHCl$ .

Reason (R) : There is only one  $\pi$ -bond exist between two carbon of  $CH_2 = CHCl$ .

- A. Both statement (S) and Reasons (R) are true. And (R) gives complete explanation of (S).
- B. Both statement (S) and Reasons (R) are true. But (R) does not gives complete explanation of (S).
- C. Both statement (S) and Reason (R) are wrong
- D. Statement (S) is wrong and reason (R) is right

**Answer: B**



[View Text Solution](#)

14. Statement (S) : Cis and trans geometrical isomers of  $CH_3CH = CHCH_3$  is possible.

Reason (R) : Free radical rotation surrounding carbon-carbon double bond is not possible in  $CH_3CH = CHCH_3$ .

- A. Both statement (S) and Reasons (R) are true. And (R) gives complete explanation of (S).

- B. Both statement (S) and Reasons (R) are true. But (R) does not gives complete explanation of (S).
- C. Both statement (S) and Reason (R) are wrong
- D. Statement (S) is wrong and reason (R) is right

**Answer: A**

 [View Text Solution](#)

**15.** Statement (S) : Polarity of cis isomer is more with respect to trans isomers.

Reason (R) : Cis and trans isomers are geometrical isomers.

- A. Both statement (S) and Reasons (R) are true. And (R) gives complete explanation of (S).
- B. Both statement (S) and Reasons (R) are true. But (R) does not gives complete explanation of (S).
- C. Both statement (S) and Reason (R) are wrong



D. Statement (S) is wrong and reason (R) is right

**Answer: B**



[View Text Solution](#)

## Section C Multiple Choice Questions Mcqs

1. Which of the following possess tertiary carbon ?

A. Propane

B. n-butane

C. 2-methyl propane

D. 2,2-dimethylpropane

**Answer: C**



[View Text Solution](#)

## Section C Multiple Choice Questions Mcqs

1. Which of the following is sodalime ?

A.  $\text{KOH}$ ,  $\text{CaO}$

B.  $\text{Ca}(\text{OH})_2$ ,  $\text{NaOH}$

C.  $\text{H}_2\text{O}$ ,  $\text{NaOH}$

D.  $\text{NaOH}$ ,  $\text{CaO}$

**Answer: D**



[View Text Solution](#)

2. Which of the following has common formula  $\text{C}_n\text{H}_{2n}$  ?

A. Alkane

B. Alkene

C. Alkyne

D. Cycloalkene

**Answer: B**



[View Text Solution](#)

3. Which of the following is Lynder's catalyst ?

A. Ni + pt

B. CaO . NaOH

C. Pd+C

D.  $Pt + H_2$

**Answer: C**



[View Text Solution](#)

4. Which of the following is saturated hydrocarbon ?

A. Ethene

B. Propane

C. Ethyne

D. Butyne

**Answer: B**



[View Text Solution](#)

5. Which of the following type of hydrogen is not possible ?

A.  $3^\circ$

B.  $2^\circ$

C.  $4^\circ$

D.  $1^\circ$

**Answer: C**



[View Text Solution](#)

6.  $4^\circ$  hydrogen is not possible, give reasons.....

A. Carbon has four covalent bond.

B. Centre carbon is attach with other four carbon and so there is no valence for attachment of hydrogen

C.  $1^\circ$ ,  $2^\circ$  and  $3^\circ$  carbon are stable but  $4^\circ$  carbon is unstable.

D. Free radical is formed with  $4^\circ$  carbon.

**Answer: B**



[View Text Solution](#)

7. Which of the following is true for structure given in Group A with Group -B find correct option.



A. (i-s), (ii-p), (iii-r), (iv-q)

B. (i-p), (ii-q), (iii-r), (iv-s)

C. (i-p),(ii-p), (iii-q), (iv-r)

D. (i-p), (ii-p), (iii-q), (iv-r)

**Answer: C**

 [View Text Solution](#)

8. C-C  $\sigma$  bond enthalpy of ethane is  $397 \text{ KJ mol}^{-1}$  and C-C  $\pi$ -bond enthalpy in ethene is  $284 \text{ kJ mol}^{-1}$ . So what is the bond enthalpy of double bond in  $\text{kJ mol}^{-1}$  in ethane ?

A. 384

B. 823

C. 681

D. 284

**Answer: C**



[View Text Solution](#)

9. What is the single bond, double bond and triple bond enthalpy in ethane, ethene and ethyne respectively in  $\text{kJ mol}^{-1}$  ?

A. 681, 384, 823

B. 384, 681, 823

C. 823, 681, 384

D. None of the above

**Answer: B**



[View Text Solution](#)

10. Find correct chemical reactivity order for the (a) ethane (b) ethene and (c) ethyne

A.  $(a) > (b) > (c)$

B.  $(c) > (b) > (a)$

C.  $(a) > (c) > (b)$

D.  $(c) > (a) > (b)$

**Answer: B**

 [View Text Solution](#)

11. What is the correct order for boiling point having same carbon in alkane, alkene and alkyne ?

A. Alkane  $>$  Alkene  $>$  Alkyne

B. Alkyne  $<$  Alkene  $<$  Alkane

C. Alkene  $<$  Alkane  $<$  Alkyne

D. Alkane  $<$  Alkyne  $<$  alkene

**Answer: A**

 [View Text Solution](#)



12. Which of the following compound possess geometrical isomerism ?

- A. Alkane
- B. Alkene
- C. Alkyne
- D. None of these

**Answer: B**



[View Text Solution](#)

13. Which of the following is not benzenoid ?

A. 

B. 

C. 

D. 

**Answer: C**



[View Text Solution](#)

14. Which of the following product can be obtained on reaction of benzene with chlorine in presence of anhydrous  $AlCl_3$  ?

- A. Chlorobenzene
- B. Hexachlorocyclohexane
- C. Benzene hexachloride
- D. None of these

**Answer: A**



[View Text Solution](#)

15. Which of the following reactant can react with benzene ?

A.  $I_2$  and sunlight (Normal temperature)

B. With cold  $KMnO_4$

C. With bromine water

D. With bromine +  $FeBr_3$

**Answer: D**

 [View Text Solution](#)

**16.** Which scientist has obtained benzene first ?

A. Kekule

B. Friedel-Craft

C. Michal Ferade

D. August Hoffman

**Answer: C**

 [View Text Solution](#)

17. Which of the following has highest boiling point ?

A. Neo-pentane

B. n-pentane

C. Iso-pentane

D. n-hexane

**Answer: D**



[View Text Solution](#)

18. Propene + X  $\xrightarrow{(C_6H_5CO)_2OO}$  1-halopropene, then what is 'X' ?

A. HI

B. HCl

C. HBr

D. All of the given

**Answer: C**



[View Text Solution](#)

19.  $X + \text{water} \rightarrow \text{ethyne}$ , so what is compound X?

A. Sodium carbide

B. Sodium ethenide

C. calcium carbide

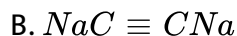
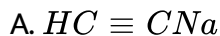
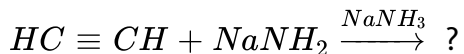
D. Calcium oxide

**Answer: C**



[View Text Solution](#)

20. One following reaction which product is formed



D. All of the given

**Answer: D**



[View Text Solution](#)

21. o-xylene, m-xylene and p-xylene are isomers of each other. What type of isomerism they possess ?

A. Functional group isomerism

B. Chain isomerism

C. Position isomerism

D. Geometrical isomerism

**Answer: C**



[View Text Solution](#)

22. In nitration of benzene .....is electrophile.

A. Nitrate ions

B. Nitrite ions

C. Nitronium ions

D. Nitro

**Answer: C**



[View Text Solution](#)

23. If on electrophilic substitution reaction of  $C_6H_5Y$  gives  $m$ - $NO_2C_6H_4Y$  then what is not a form of the following?

A.  $-NH_2$

B.  $-NO_2$

C.  $-COOH$

D.  $-SO_3H$

**Answer: A**



[View Text Solution](#)

24. Which of the following does not possess zero magnetic momentum?

A. Transvinly chloride

B. p-xylene

C. cis-but-2-ene

D. Methane



**Answer: C**

 [View Text Solution](#)

**25.** Benzene burns with sooty flame in burner, because....

- A. it is aliphatic compound
- B. it is aromatic
- C. it is cyclic compound
- D. due to resonance effect

**Answer: B**

 [View Text Solution](#)

**26.** Which main product is obtained when 3-methyl-pent-2-ene react with HBr in presence of peroxides ?

- A. 3-bromo-3-methylpentane
- B. 4-bromo-3-methylpentane
- C. 2-bromo-3-methylpentane
- D. All of these

**Answer: D**

 [View Text Solution](#)

## Section C Mcqs Asked In Competitive Exam

1. The decreasing order of boiling points is

- A. n-pentane > iso-pentane > neo-pentane
- B. iso-pentane > n-pentane > neo-pentane
- C. neo-pentane > iso-pentane > n-pentane
- D. n-pentane > neo-pentane > iso-pentane

**Answer: A**



[View Text Solution](#)

2. In the preparation of Grignard reagent from haloalkane, the metal used is

A. Mg

B. Zn

C. Li

D. K

**Answer: A**



[View Text Solution](#)

3. Sodium acetate can be converted to ethane by

- A. Heating with  $LiAlH_4$
- B. Electrolysis its aqueous solution
- C. Heating with sodalime
- D. Heating with calcium acetate

**Answer: B**

 [View Text Solution](#)

4. In the reaction  $CH_3 - Br + 2Na + Br - CH_3 \rightarrow$ , the reaction is called

- A. Wurtz reaction
- B. Aldol condensation
- C. Perkin's reaction
- D. Levit reaction

**Answer: A**

 [View Text Solution](#)

5. In Wurtz reaction, the reagent used is

- A. Na
- B. Na/Liquid  $NH_3$
- C. Na/dry ether
- D. Na/dry alcohol

**Answer: C**

 [View Text Solution](#)

6. Which of the following has highest octane number

- A. n-hexane
- B. n-heptane
- C. n-pentane

D. 2,2,4-trimethyl pentane

**Answer: D**



[View Text Solution](#)

7. n-hexadecane has cetane number

A. 90

B. 100

C. 110

D. zero

**Answer: B**



[View Text Solution](#)

8. Petroleum refining is

- A. distillation of petroleum to get different fractions.
- B. obtaining aromatic compounds from aliphatic compounds present in petroleum.
- C. cracking of petroleum to get gaseous hydrocarbons.
- D. purifications of petroleum.

**Answer: A**



[View Text Solution](#)

9. The chemical added to leaded petrol to prevent the deposition of lead in the combustion chamber is

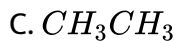
- A. Iso-octane
- B. Ethylene dibromide
- C. Tetraethyl lead
- D. Mercaptan

**Answer: B**



**View Text Solution**

10. Which of the following is not formed by the reaction of  $Cl_2$  on  $CH_4$  in sunlight ?



**Answer: D**



**View Text Solution**

11. Alkenes usually show which type of reaction



- A. Addition
- B. Substitution
- C. Elimination
- D. Superposition

**Answer: A**

 [View Text Solution](#)

**12. Towards electrophilic reagents**

- A. ethene is more reactive than ethyne
- B. ethene is less reactive than ethyne
- C. both have equal reactivity
- D. the reactivity of both cannot be predicted.

**Answer: A**

 [View Text Solution](#)

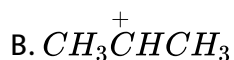
13. The final product formed when ethyl bromide is treated with excess of alcoholic KOH is

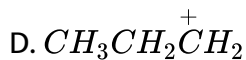
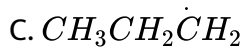
- A. Ethylene
- B. Ethane
- C. Ethyne
- D. Vinyl bromide

**Answer: A**

 [View Text Solution](#)

14. The intermediate during the addition of HCl to propene in the presence of peroxide is





**Answer: B**

 [View Text Solution](#)

15.  $CH_2 = CH_2 \xrightarrow[KOH / H_2O]{KMnO_4} X$ . Product 'X' in above reaction is

A. Ethylene glycol

B. Glucose

C. Ethanol

D. All of these

**Answer: A**

 [View Text Solution](#)

16. The test for unsaturations is confirmed by the decolourisation of which of the following.

A. Iodine water

B.  $CuSO_4$  solution

C. Bromine water

D. All of these

Answer: C



[View Text Solution](#)

17. Which of the following compound is produced when  $CH_2 = CH - (CH_2)_2COOH$  reacts with HBr in presence of peroxides

A.  $CH_3CH(CH_2)_5COOH$

B.  $BrCH_2CH_2(CH_2)_5COOH$

C.  $CH_3CH_2CH_2(CH_2)_5COOH$

D.  $CH_3CH_2BrCH_2CH_2COOH$

**Answer: B**

 [View Text Solution](#)

18. 1,3-butadiene reacts with ethylene to form

A. Benzene

B. Cyclohexane

C. Cyclohexene

D. 2,3-Dimethyl butane

**Answer: C**

 [View Text Solution](#)

19. In paraffins, with the increasing molecular weight, it is found that

- A. Freezing point decreases
- B. Boiling poing decreases
- C. Boiling poing increases
- D. Vapour pressure decreases

**Answer: C**

 [View Text Solution](#)

**20.** A gas formed by the action of alcoholic KOH on ethyl iodide, decolourless alkaline  $KMnO_4$  solution. The gas is

- A.  $CH_4$
- B.  $C_2H_6$
- C.  $C_2H_4$
- D.  $C_2H_2$

**Answer: C**

 [View Text Solution](#)

21. Which of the following gases is used for welding

A. Methane

B. Ethane

C. Acetylene

D. Ethene

Answer: C

 [View Text Solution](#)

22. 1-butylene reacts with cold alkaline  $KMnO_4$  to produce

A.  $CH_3CH_2COOH$

B.  $CH_3CH_2CH_2COOH$

C.  $CH_3CH_2COOH + CO_2$



Answer: C

 [View Text Solution](#)

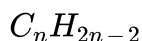
23. Acetylenic hydrogens are acidic because

A. Sigma electron density of C-H bond in acetylene is nearer to carbon, which has 50% s-character.

B. Acetylene has only one hydrogen on each carbon.

C. Acetylene contains least number of hydrogens among the possible hydrocarbons having two carbons

D. Acetylene belongs to the class of alkynes with molecular formula



Answer: A

 [View Text Solution](#)



24. Poisonous has 'Lewisite' is obtained by the reaction of

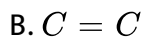
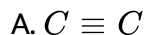


Answer: A



[View Text Solution](#)

25. Hydrocarbon containing following bond is most reactive



D. All of these

**Answer: A**

 [View Text Solution](#)

**26.** Acetylene gives

A. White precipitate with  $AgNO_3$  and red precipitate with  $Cu_2Cl_2$

B. White precipitate with  $Cu_2Cl_2$  and red precipitate with  $AgNO_3$

C. White precipitate with both the reagents

D. Red precipitate with both the reagents

**Answer: A**

 [View Text Solution](#)

27. When propyne reacts with aqueous  $H_2SO_4$  in the presence of  $HgSO_4$ , the major product is

- A. Propanal
- B. Propyl hydrogen sulphate
- C. Acetone
- D. Propanol

**Answer: C**



[View Text Solution](#)

28. Which of the following is used to distinguish ethylene and acetylene.

- A. Alkaline  $KMnO_4$
- B. Bromine water
- C. Ammonical cuprous chloride
- D. Conc.  $H_2SO_4$

**Answer: C**

 [View Text Solution](#)

**29.** The reaction of propene with HOCl proceeds via the addition of

- A.  $H^+$  in the first step
- B.  $Cl^+$  in the first step
- C.  $OH^-$  in the first step
- D.  $Cl^+$  and  $OH^-$  in a single step

**Answer: D**

 [View Text Solution](#)

**30.** Acetylene reacts with ammonical  $AgNO_3$  forming

- A. Silver acetylene

B. Silver acetate

C. Metal silver

D. Silver mirror

**Answer: A**

 [View Text Solution](#)

**31.** The function of anhydrous  $AlCl_3$  in the Friedel-Crafts reaction is to

A. Absorb water

B. Absorb HCl

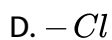
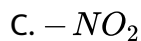
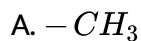
C. To produce electrophile

D. To produce nucleophile

**Answer: C**

 [View Text Solution](#)

32. Meta-directing and deactivating group in aromatic electrophilic substitution is



**Answer: C**



[View Text Solution](#)

33. The ratio of  $\sigma$  and  $\pi$  bonds in benzene is

A. 2

B. 4

C. 6

D. 8

**Answer: B**



**View Text Solution**

**34.** Carbon atoms in benzene molecule is inclined at an angle of

A.  $120^\circ$

B.  $180^\circ$

C.  $109^\circ 28'$

D.  $60^\circ$

**Answer: A**



**View Text Solution**

**35.**  $C_6H_6 + CH_3Cl \xrightarrow[AlCl_3]{\text{Anhydrous}} C_6H_5CH_3 + HCl$  is an example of

A. Friedel-Craft's reaction

B. Kolbe's synthesis

C. Wurtz reaction

D. Grignard reaction

**Answer: A**

 [View Text Solution](#)

**36.** Napthalene is a/an

A. Ionic solid

B. Covalent solid

C. Metallic solid

D. Meolcular solid

**Answer: D**

 [View Text Solution](#)



37.  $CH \equiv CH + HBr \rightarrow X$ , product X is

- A. Ethylene bromide
- B. Vinyl bromide
- C. Bromo ethane
- D. Ethyldine bromide

**Answer: B**



[View Text Solution](#)

38. The addition of HBr is easiest with

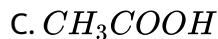
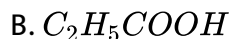
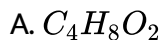
- A.  $Cl_2C = CHCl$
- B.  $ClCH = CHCl$
- C.  $CH_3 - CH = CH_2$
- D.  $(CH_3)_2C = CH_2$

**Answer: D**



[View Text Solution](#)

39. In ethylene, carbon monoxide and water is heated at high temperature, which of the following is formed



**Answer: B**



[View Text Solution](#)

40. The decreasing order of acidic character among ethane (I), ethene (II), ethyne (III) and propyne (IV) is

A. (I) > (II) > (III) > (IV)

B. (II) > (III) > (I) > (IV)

C. (III) > (IV) > (II) > (I)

D. (IV) > (III) > (II) > (I)

**Answer: C**

 [View Text Solution](#)

## Section C Mcqs Asked In Board Exam

1. Which mixture is used as Lindlar's catalyst ?

A. Pd+Charcoal

B. Ni+P

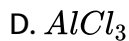
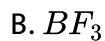
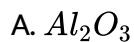
C. Pt+Halogen

D. Pd+Pt

**Answer: A**

 [View Text Solution](#)

2. Which of the following is strong reducing agent ?



**Answer: C**

 [View Text Solution](#)

3. Which is the correct structure of TNT from the following ?



B. 

C. 

D. 

**Answer: C**

 [View Text Solution](#)

4. What will be the total no. of isomers of an acyclic saturated hydrocarbon having molecular mass 72g/mol ?

A. 3

B. 4

C. 5

D. 2

**Answer: A**

 [View Text Solution](#)

5. Which of the reagent is used in Kharash effect ?

A. HI

B. HCl

C. HBr

D. HF

**Answer: C**



[View Text Solution](#)

6. Which substance has fruity sweet smell ?

A. Pent-1-ene

B. Propene

C. But-1-ene

D. Ethene

**Answer: D**



**View Text Solution**

7. The number of  $\sigma$  and  $\pi$  bonds in phenol respectively are .....

A. 12,3

B. 13,4

C. 13,2

D. 13,3

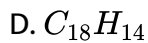
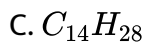
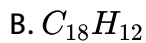
**Answer: D**



**View Text Solution**

8. The molecular formula of Naphthacene is .....

A.  $C_{18}H_{10}$



**Answer: B**

 [View Text Solution](#)

9. Which compound will react with Zn to form 2-butene ?

A. 2,3-dibromobutane

B. 1,2-dibromobutane

C. 2-butyne

D. none of these

**Answer: A**

 [View Text Solution](#)



10. The catalyst used for obtaining carbonyl compound from alkyne during hydration is .....

A. HCN

B.  $HgSO_4$

C.  $HgCl_2$

D. Pt

**Answer: B**



[View Text Solution](#)

11. The hybrid state of Carbon in Acetylene is same as that of .....

A. Graphite

B.  $BeH_2$

C. Benzene

D. Diamond

**Answer: B**



[View Text Solution](#)

**12. Which of the following hydrocarbon cannot have cyclic type ?**

A. Alkane

B. Alkene

C. Alkyne

D. Arene

**Answer: A**



[View Text Solution](#)

**13. Which of the following substitution reaction of alkane is reversible ?**

A. Fluorination

B. Chlorination

C. Bromination

D. Iodination

**Answer: D**

 [View Text Solution](#)

**14.** What will be the number of  $\sigma$  and  $\pi$  bonds in Biphenyl respectively ?

A.  $12\sigma$  and  $6\pi$

B.  $22\sigma$  and  $6\pi$

C.  $23\sigma$  and  $6\pi$

D.  $13\sigma$  and  $6\pi$

**Answer: C**

 [View Text Solution](#)

15. What will be the main product obtained during hydrobromination of Pent-1-ene in presence of Benzoyl peroxide ?

- A. 1-bromo pentane
- B. 2-bromo pentane
- C. 3-bromo pentane
- D. 2-methyl, 1-bromo butane

**Answer: A**



[View Text Solution](#)

16. Which mixture is used as Lindlar's catalyst ?

- A. Pt+Charcoal
- B. Pd+Halogen
- C. Pt+Halogen
- D. Pd+Charcoal

**Answer: D**



**View Text Solution**

**17.** Friedel-Craft's reaction of Toluene with ethanoic anhydride produces

- A. Acetophenone
- B. Methyl benzene
- C. Ethyl benzene
- D. p-methyl acetophenone

**Answer: D**



**View Text Solution**

**18.** Give IUPAC name of  $(CH_3)_3C \cdot C \equiv C \cdot C(CH_3)_3$ .

- A. Di(tri methyl)but-2-yne

B. 3,3,4,4-tetramethylhex-3-yne

C. 2,2,5,5-tetramethylhex-3-yne

D. 2,2,5,5-tetramethylhex-4-yne

**Answer: C**

 [View Text Solution](#)

**19. Which of the following is used catalyst in preparation of PVC ?**

A.  $Hg_2Cl_2$

B.  $HgCl_2$

C. Hg

D.  $HgSO_4$

**Answer: B**

 [View Text Solution](#)

20. Which of the following compounds possesses  $3^\circ$  carbon atom ?

A. 1-Chloro butane

B. n-Butane

C. Cyclo butane

D. Iso butane

**Answer: D**



[View Text Solution](#)

21. How many carbon atoms are  $sp^3$  hybridized in but-2-en ?

A. 4

B. 2

C. 3

D. 1

**Answer: B**



[View Text Solution](#)

**22.** With which reactant ethylene will react to form vinyl cyanide ?

A. HCN

B. KCN

C.  $HgCl_2$

D. NaCN

**Answer: A**



[View Text Solution](#)

**23.** Write IUPAC name of Parachloro toluene.

A. 1-chloro-2-methyl benzene



B. 2-chloro-4-methyl benzene

C. 4-chloro-2-methyl benzene

D. 1-chloro-4-methyl benzene

**Answer: D**

 [View Text Solution](#)

**24.** Which of the following functional groups passes on electron towards the phenyl ring ?

A.  $-SO_3H$

B.  $-CHO$

C.  $-Cl$

D.  $-NO_2$

**Answer: C**

 [View Text Solution](#)

25. Possible number of cyclic isomers for the compound having molecular formula  $C_6H_4Cl_2$  is .....

- A. 6
- B. 4
- C. 5
- D. 3

**Answer: D**

 [View Text Solution](#)

26. How many  $\sigma$  (sigma) and  $\pi$  (pi) bonds are present in benzoic acid ?

- A.  $14\sigma, 4\pi$
- B.  $14\sigma, 3\pi$
- C.  $15\sigma, 3\pi$

D.  $15\sigma, 4\pi$

**Answer: D**



[View Text Solution](#)

27. Which of the following metals is not used as a catalyst in addition reaction of alkyne ?

A. Ni

B. Pd+Halogen

C. Mn

D. Pt

**Answer: C**



[View Text Solution](#)

28. How many benzene rings are there in the structural formula of Naphthalene ?

- A. 5
- B. 3
- C. 4
- D. 2

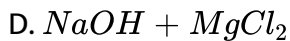
**Answer: C**



[View Text Solution](#)

29. Which of the following reagents is used for decarboxylation of carboxylic acid ?

- A.  $\text{NaHCO}_3 + \text{KCl}$
- B.  $\text{NaHCO}_3 + \text{NaCl}$
- C.  $\text{NaOH} + \text{CaO}$



**Answer: C**

 [View Text Solution](#)

**30.** Which gas is released during the reaction of Sodalime with Ethylene ?

- A. Nitrogen
- B. Hydrogen
- C. Ammonia
- D. Ethene

**Answer: C**

 [View Text Solution](#)

**31.** Which of the following is Lindlar's catalyst ?

A. Pd+Pt

B. Ni+P

C. Pt+Charcoal

D. Pd+Charcoal

**Answer: D**

 [View Text Solution](#)

**32.** The number of  $\sigma$  and  $\pi$  bonds present in cis-but-2-ene is ..... .

A.  $9\sigma$  and  $1\pi$

B.  $5\sigma$  and  $1\pi$

C.  $11\sigma$  and  $1\pi$

D.  $8\sigma$  and  $1\pi$

**Answer: C**

 [View Text Solution](#)

33.  $BF_3$  is used as a catalyst in Friedel-Craft alkylation and acylation reaction because it is a.....

- A. Lewis acid
- B. Lewis base
- C. Nucleophile
- D. Arrhenius base

**Answer: A**



[View Text Solution](#)

34. The reaction of n-hexane in presence of catalyst at 773 K and 10-20 bar pressure to form benzene is known as .....reaction.

- A. Hydration
- B. Hydrogenation

C. Dehydration

D. Dehydrogenation

**Answer: D**



[View Text Solution](#)

**35.** What is the value of Dipole moment ( $\mu$ ) for trans-but-2-ene ?

A. 2.5 D

B. 2.0 D

C. 0.00D

D. 0.33 D

**Answer: C**



[View Text Solution](#)



36. Which of the following compounds is non aromatic ?

A. 

B. 

C. 

D. 

Answer: B



[View Text Solution](#)

37. Which of the following group is not an electron withdrawing group ?

A.  $-NO_2$

B.  $-C_2H_5$

C.  $-COOH$

D.  $-CCl_3$

**Answer: B**



[View Text Solution](#)

**38.** Which of the following substance is in liquid form at room temperature ?

A. Methane

B. Hexane

C. Propane

D. Butane

**Answer: B**



[View Text Solution](#)

**39.** The isomer of Cyclopentane is..... .

- A. Pent-1-ene
- B. Pent-2-ene
- C. 2-methyl but -1-ene
- D. All the given three options

**Answer: D**

 [View Text Solution](#)

### Section C Mcqs Asked In Jee Neet Aieee

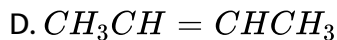
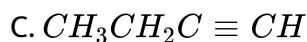
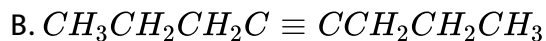
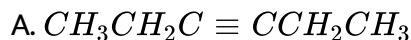
1. The reaction of toluene with  $Cl_2$  in presence of  $FeCl_3$  gives predominantly
- A. m-chlorobenzene
  - B. benzoyl chloride
  - C. benzyl chloride
  - D. o-and p-chlorotoluene

Answer: D



View Text Solution

2. The hydrocarbon which can react with sodium in liquid ammonia is



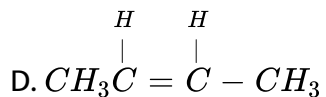
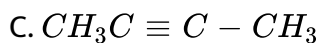
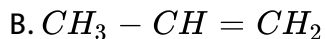
Answer: C



View Text Solution

3. The treatment of  $CH_3MgX$  with  $CH_3C \equiv C - H$  produces





**Answer: A**

 [View Text Solution](#)

4. The IUPAC name of the compound having the formula  $CH \equiv C - CH = CH_2$  is

A. 1-butyn-3-ene

B. but-1-yne-3-ene

C. 1-butene-3-yne

D. 3-butene-1-yne

**Answer: C**

 [View Text Solution](#)

5. Liquid hydrocarbons can be converted to a mixture of gaseous hydrocarbons by :

- A. oxidation
- B. cracking
- C. distillation under reduced pressure
- D. hydrolysis

**Answer: B**



[View Text Solution](#)

6. The IUPAC name of the compound  $CH_3CH = CH \equiv CH$  is

- A. Pent-1-yn-3-ene
- B. Pent-4-yn-2-ene
- C. Pent-3-en-1-yne

D. Pent-2-en-4-yne

**Answer: D**

 [View Text Solution](#)

7. The total number of  $\pi$ -bond electrons in the following structure is :



A. 4

B. 8

C. 12

D. 16

**Answer: B**

 [View Text Solution](#)

8. Given :



The enthalpy of hydrogenation of these compounds will be in the order as :

A.  $I > II > III$

B.  $III > II > I$

C.  $II > III > I$

D.  $II > I > III$

**Answer: B**



[View Text Solution](#)

9. The enolic form of ethyl acetoacetate as below has :



A. 18 sigma bonds and 2 pi - bonds



B. 16 sigma bonds and 1 pi - bonds

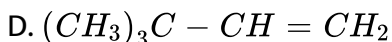
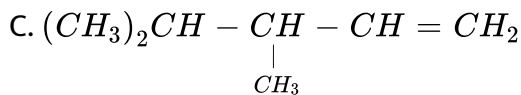
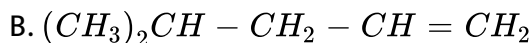
C. 9 sigma bonds and 2 pi - bonds

D. 9 sigma bonds and 1 pi - bonds

**Answer: A**

 [View Text Solution](#)

10. 2,3-Dimethyl-2-butene can be prepared by heating which of the following compounds with a strong acid ?



**Answer: D**

 [View Text Solution](#)

11. In the reaction with HCl, an alkene reacts in accordance with Markovnikov's rule to give a product 1-chloro-1-methylcyclohexane. The possible alkene is :

A. 

B. 

C. 

D. (A) and (B)

**Answer: D**



[View Text Solution](#)

12. The oxidation of benzene by  $V_2O_5$  in the presence of air produce :

A. benzoic acid


B. benzaldehyde

C. benzoic anhydride

D. maleic anhydride

**Answer: D**

 [View Text Solution](#)

13. Which of the following is not the product of dehydration of  ?

A. 

B. 

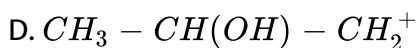
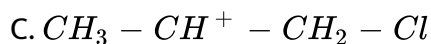
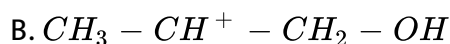
C. 

D. 

**Answer: D**

 [View Text Solution](#)

14. The reaction of propene with  $HOCl(Cl_2 + H_2O)$  proceeds through the intermediate :



**Answer: B**



[View Text Solution](#)

15. The correct statement regarding the comparison to staggered and eclipsed conformations of ethane is :

A. The eclipsed conformation of ethane is more stable than staggered conformation, because eclipsed conformation has no torsional strain.

B. The eclipsed conformation of ethane is more stable than the staggered conformation even though the eclipsed conformation has torsional strain.

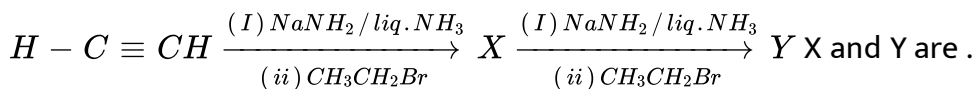
C. The staggered conformation of ethane is more stable than the eclipsed conformation, because the staggered conformation has no torsional strain.

D. The staggered conformation of ethane is less stable than the eclipsed conformation because the staggered conformation has torsional strain.

**Answer: C**

 [View Text Solution](#)

**16.** In the reaction



A. X=2-Butyne, Y = 3-Hexyne

B. X=2-Butyne , Y = 2-Hexyne

C. X = 1-Butyne, Y = 2-Hexyne

D. X=1-Butyne, Y = 3-Hexyne

**Answer: D**

 [View Text Solution](#)

17. Consider the nitration of benzene using mixed conc.  $H_2SO_4$  and  $HNO_3$ . If a large amount of  $KHSO_4$  is added to the mixture, the rate of nitration will be :

A. Slower

B. Unchanged

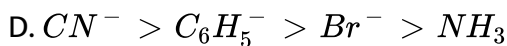
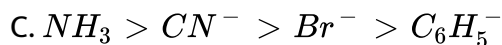
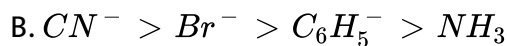
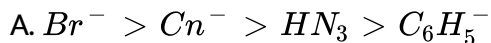
C. Doubled

D. Faster

**Answer: A**

 [View Text Solution](#)

18. The correct increasing of trans-effect of the following species is :



**Answer: D**

 [View Text Solution](#)

19. Which of the following can be used as the halide component for Friedel-Craft's reaction ?

A. Chloroethane

B. Isopropyl chloride

C. Chlorobenzene

D. Bromobenzene

**Answer: B**

 [View Text Solution](#)

20. In Which of the following molecules, all atoms are coplanar ?

A. 

B. 

C. 

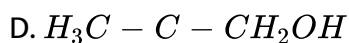
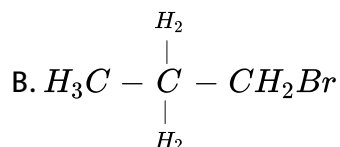
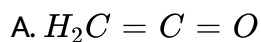
D. 

**Answer: C**

 [View Text Solution](#)




21. Which of the following compounds shall not produced propene by reaction with HBr followed by elimination of direct only elimination reaction ?



Answer: A

 [View Text Solution](#)

22. In the given reaction   $\xrightarrow[0^\circ C]{HF}$  P the product P is :



C. 

D. 

**Answer: A**

 [View Text Solution](#)

**23.** The compound that will react most readily with gaseous bromine has the formula

A.  $C_4H_{10}$

B.  $C_2H_4$

C.  $C_3H_6$

D.  $C_2H_2$

**Answer: C**

 [View Text Solution](#)

24. Which of the following molecule possess least resonance stability ?

A. 

B. 

C. 

D. 

**Answer: D**



[View Text Solution](#)

25. Which of the following carbocations is expected to be most stable ?

A. 

B. 

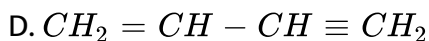
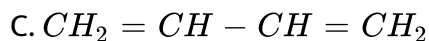
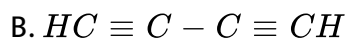
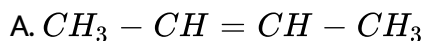
C. 

D. 

**Answer: C**

 [View Text Solution](#)

26. Which of the following molecules represents the order of hybridisation  $sp^2$ ,  $sp^2$ ,  $sp$ ,  $sp$  from left to right atoms ?

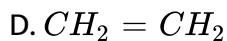
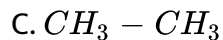
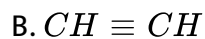


**Answer: D**

 [View Text Solution](#)

27. Hydrocarbon (A) reacts with bromine by substitution to form an alkyl bromide which by Wurtz reaction is converted to gaseous hydrocarbon

containing less than four carbon atoms. (A) is



**Answer: A**



[View Text Solution](#)

**28.** Which of the following compound gives easily sulphonation reaction ?

A. Benzene

B. Nitrobenzene

C. Toluene

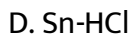
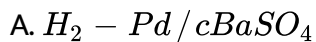
D. Chlorobenzene

**Answer: C**



[View Text Solution](#)

29. The trans-alkenes are formed by the reduction of alkynes with :



Answer: C



[View Text Solution](#)

30. The number of sigma ( $\sigma$ ) and pi ( $\pi$ ) bonds in pent-2-en-4-yne is .....

A.  $13\sigma$ -bonds and no  $\pi$ -bonds

B.  $10\sigma$ -bonds and no  $3\pi$ -bonds

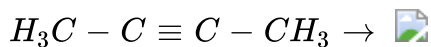
C.  $8\sigma$ -bonds and no  $5\pi$ -bonds

D. 11 $\sigma$ -bonds and no 2 $\pi$ -bonds

Answer: B

 [View Text Solution](#)

31. The most suitable reagent for the following conversion, is :



A.  $Hg^{2+} / H^+, H_2O$

B. Na/Liquid  $NH_3$

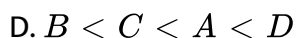
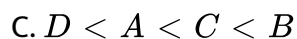
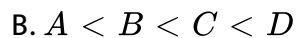
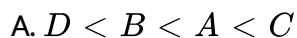
C.  $H_2$ , Pd/C, quinoline

D. Zn/HCl

Answer: C

 [View Text Solution](#)

32. The increasing order of reactivity of the following compounds towards aromatic electrophilic substitution reaction is :



**Answer: C**



[View Text Solution](#)

33. The major products A and B in the following reactions are :





C. 

D. 

**Answer: A**

 [View Text Solution](#)

## Section D Ncert Exemplar Solution

1. Arrange the following in decreasing order of their boiling points.

(A) n-butane

(B) 2-methylbutane

(C) n-pentane

(D) 2,2-dimethylpropane

A.  $A > B > C > D$

B.  $B > C > D > A$

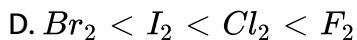
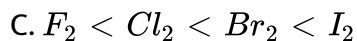
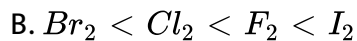
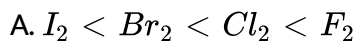
C.  $D > C > B > A$

$$D. C > B > D > A$$

**Answer: D**

 [View Text Solution](#)

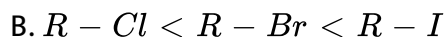
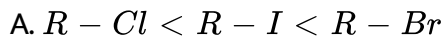
2. Arrange the halogens  $F_2$ ,  $Cl_2$ ,  $Br_2$ ,  $I_2$  in order of their increasing reactivity with alkanes.



**Answer: A**

 [View Text Solution](#)

3. The increasing order of reduction of alkyl halides with zinc and dilute HCl is .....



**Answer: B**



[View Text Solution](#)

4. The correct IUPAC name of the following alkane is



A. 3,6-Diethyl-2-methyloctane

B. 5-Isopropyl-3-ethyloctane

C. 3-Ethyl-5-isopropyloctane

D. 3-Isopropyl-6-ethyloctane

**Answer: A**

 [View Text Solution](#)

5. The addition of HBr to 1-butene gives a mixture of products A, B and C.....



- A. A and B as major and C as minor products
- B. B as major, A and C as minor products
- C. B as minor, A and C as major products
- D. A and B as minor and C as major products

**Answer: A**

 [View Text Solution](#)

6. Which of the following will not show geometrical isomerism ?

A. 

B. 

C. 

D. 

**Answer: D**

 [View Text Solution](#)

7. Arrange the following hydrogen halides in order of their decreasing reactivity with propene.

A.  $HCl > HBr > HI$

B.  $HBr > HI > HCl$

C.  $HI > HBr > HCl$

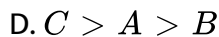
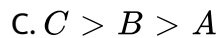
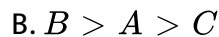
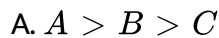
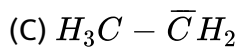
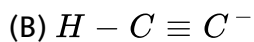
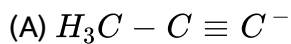
D.  $HCl > HI > HBr$

**Answer: C**



[View Text Solution](#)

**8.** Arrange the following carbanions in order of their decreasing stability.

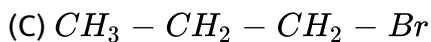
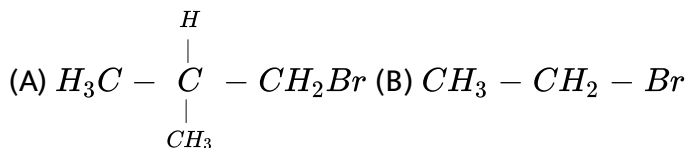


**Answer: B**



[View Text Solution](#)

9. Arrange the following alkyl halides in decreasing order of the rate of elimination reaction with alcoholic KOH.



A.  $A > B > C$

B.  $C > B > A$

C.  $B > C > A$

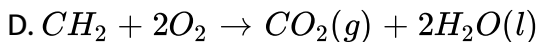
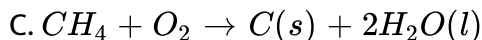
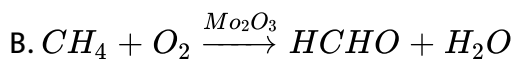
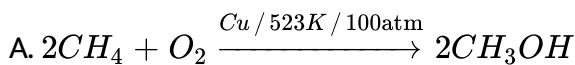
D.  $A > C > B$

Answer: D



[View Text Solution](#)

10. Which of the following reactions of methane is incomplete combustion?

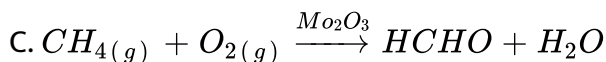
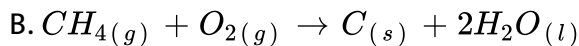
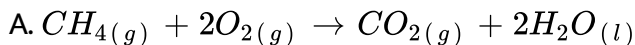


Answer: C

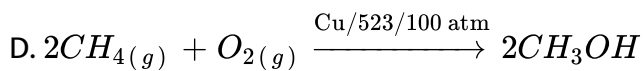
 [View Text Solution](#)

## Section D Ncert Exemplar Solution Multiple Choice Questions Mcqs More Than One Correct Answer

1. Some oxidation reactions of methane are given below. Which of them is/are controlled oxidation reactions ?



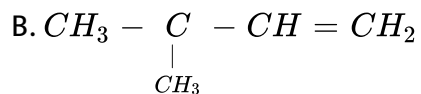
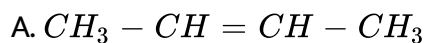




Answer: A::C::D

 [View Text Solution](#)

2. Which of the following alkenes on ozonolysis give a mixture of ketones only ?



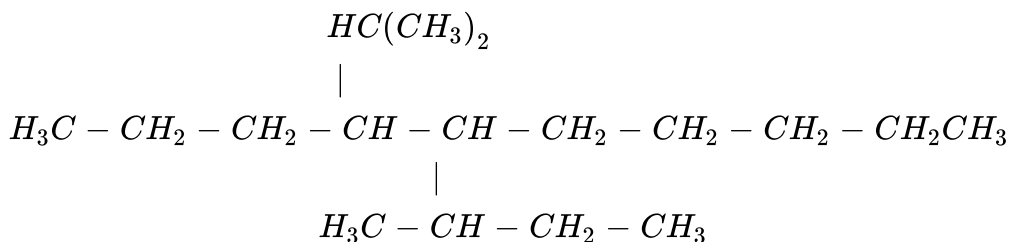
C. 

D. 

Answer: A::C::D

 [View Text Solution](#)

3. Which are the correct IUPAC names of the following compound ?



- A. 5-Butyl-4-isopropyldecane
- B. 5-Ethyl-4-propyldecane
- C. 5-sec-Butyl-4-iso-propyldecane
- D. 4-(1-methylethyl)-5-(1-methylpropyl)-decane

Answer: A::C::D



[View Text Solution](#)

4. Which are the correct IUPAC name of the following compound ?



- A. 5-(2,2-Dimethylpropyl)-decane

- B. 4-Butyl-2,2-dimethlnonane
- C. 2,3-Dimethyl-4-pentyloctane
- D. 5-Neo-pentyldecane

**Answer: A::D**

 [View Text Solution](#)

5. For an electrophilic substitution reaction, the presence of a halogens atom in the benzene ring.

- A. Deactivates the ring by inductive effect
- B. Deactivates the ring by resonance
- C. Increases the charge density at ortho and para position relative to meta position by resonance
- D. Directs the incoming electrophilic to meta position by increasing the charge density relative to ortho and para position.

**Answer: A::C::D**



**View Text Solution**

6. In an electrophilic substitution reaction to nitrobenzene, the presence of nitro group.

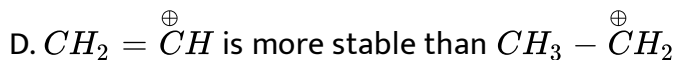
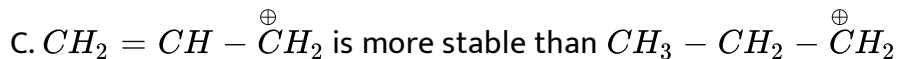
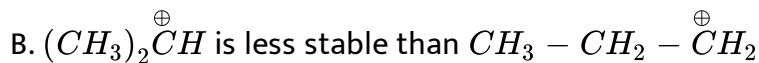
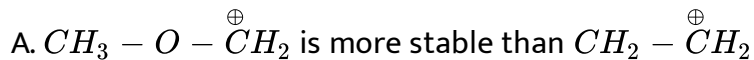
- A. Deactivates the ring by inductive effect
- B. Activates the ring by inductive effect
- C. Decreases the charge density at ortho and para position of the ring relative to meta position by resonance.
- D. Increases the charge density at meta position relative to the ortho and para positions of the ring by resonance.

**Answer: A::C::D**



**View Text Solution**

7. Which of the following are correct ?



Answer: A::C::D

 [View Text Solution](#)

8. Four structures are given in options (A) to (D), Examine them and select the aromatic structure.



**Answer: A::C::D**

 [View Text Solution](#)

**9. The molecules having dipole moment are .....**

- A. 2,2-Dimethylpropane
- B. trans-pent-2-ene
- C. cis-hex-3-ene
- D. 2,2,3,3-Tetramethylbutane

**Answer: A::B::C::D**

 [View Text Solution](#)

**Section D Ncert Exemplar Solution Short Answer Type**

1. Why do alkenes prefer to undergo electrophilic addition reaction while they do not prefer electrophilic substitution reactions? Explain.

 [View Text Solution](#)

2. Alkynes on reduction with sodium in liquid ammonia form trans alkenes. Will the butene thus formed on reduction of 2-butyne show geometrical isomerism?

 [View Text Solution](#)

3. Rotation around carbon-carbon single bond of ethane is not completely free. Justify the statement.

 [View Text Solution](#)

4. Draw Newman and Sawhorse projections for the eclipsed and staggered conformation of ethane. Which of these conformation is more stable and why ?

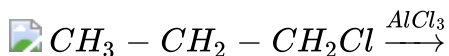


 [View Text Solution](#)

5. The intermediate carbocation formed in the reaction of HI, HBr and HCl with propene is the same and the bond energy of HCl, HBr and HI is  $430.5 \text{ kJ mol}^{-1}$ ,  $363.7 \text{ kJ mol}^{-1}$  and  $296.8 \text{ kJ mol}^{-1}$  respectively. What will be the order of reactivity of these halogen acids ?

 [View Text Solution](#)

6. What will be the product obtained as a result of the following reaction and why ?



 [View Text Solution](#)



[View Text Solution](#)

7. How will you convert benzene in to

(a) p-nitrobromobenzene

(b) m-nitrobromobenzene

 [View Text Solution](#)

8. Arrange the following set of compounds in the order of their decreasing relative reactivity with an electrophile. Give reasons.



 [View Text Solution](#)

9. Despite their -I effect, halogens are o-and p-directing in haloarenes.

Explain.

 [View Text Solution](#)

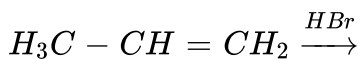
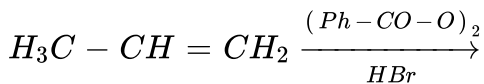
10. Why does presence of a nitro group make the benzene ring less reactive in comparison to the unsubstituted benzene ring. Explain.

 [View Text Solution](#)

11. Suggest a route for the preparation of nitrobenzene starting from acetylene ?

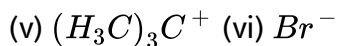
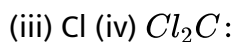
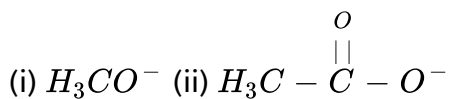
 [View Text Solution](#)

12. Predict the major product(s) of the following reactions, and explain their formation.



 [View Text Solution](#)

13. Nucleophiles and electrophiles are reaction intermediates having electron rich and electron deficient centres respectively. Hence, they tend to attack electron deficient and electron rich centres respectively. Classify the following species as electrophiles and nucleophiles.



[View Text Solution](#)

14. The relative reactivity of  $1^\circ$ ,  $2^\circ$ ,  $3^\circ$ , hydrogens towards chlorination is 1:3.8:5. Calculate the percentage of all mono chlorinated products obtained from 2-methylbutane.



[View Text Solution](#)

15. Write the structure and names of products obtained in these actions of sodium with a mixture of 1-iodo-2-methylpropane and 2-iodopropane.

 [View Text Solution](#)

16. Write hydrocarbon radicals that can be formed as intermediates during mono chlorination of 2-methylpropane ? Which of them is more stable ? Give reasons.

 [View Text Solution](#)

17. An alkane  $C_8H_{18}$  is obtained as the only product on subjecting a primary alkyl halide to Wurtz reaction. On monobromination this alkane yields a single isomer of tertiary bromide. Write the structure of alkane and the tertiary bromide.

 [View Text Solution](#)

**18.** The ring systems having following characteristics are aromatic.

(i) Planar ring containing conjugated  $\pi$  bonds.

(ii) Complete delocalization of the  $\pi$ -electrons in ring system i.e., each atom in the ring has unhybridized p-orbital, and

(iii) Presence of  $(4n+2)$   $\pi$ -electrons in the ring where n-is an integer ( $n=0,1,2\dots$ ) [Huckel. Using this information classify the following compounds as aromatic/non-aromatic



[View Text Solution](#)

**19.** Which of the following compounds are aromatic according to Huckel's rule ?



[View Text Solution](#)

20. Suggest a route to prepare ethyl hydrogen sulphate ( $CH_3 - CH_2 - OSO_2 - OH$ ) starting from ethanol ( $C_2H_5OH$ ).

 [View Text Solution](#)

## Section D Ncert Exemplar Solution Matching Type Columns

1. Match there agent from Column-I which on reaction with  $CH_3 - CH = CH_2$  gives some Product given in Column-II as per codes given below :



 [View Text Solution](#)

2. Match the hydrocarbons in column-I with the boiling points given in column-II.



 [View Text Solution](#)

 [View Text Solution](#)

3. Match the following reactants in Column-I with the corresponding reaction products in Column-II.



 [View Text Solution](#)

4. Match the following reactants in Column-I with the corresponding reaction products in Column-II.



 [View Text Solution](#)

## Section D Ncert Exemplar Solution Assertion And Reason Type

1. Assertion (A) : The compound cyclooctane has the following structural formula :



It is cyclic and has conjugated  $8\pi$ - electron system but it is not an aromatic compound.

Reason (R) :  $(4n+2) \pi$  -electrons rule does not hold good and ring is not planar.

- A. Both A and R are correct and R is the correct explanation of A.
- B. Both A and R are correct and R is not the correct explanation of A.
- C. Both A and R are not correct.
- D. A is not correct but R is correct.

**Answer: A**

 [View Text Solution](#)

2. Assertion (A) : Toluene on Friedal Crafts methylation gives o-and p-xylene.

Reason (R) :  $CH_3$  group bonded to benzene ring increases electron density at o-and p-position.



- A. Both A and R are correct and R is the correct explanation of A.
- B. Both A and R are correct and R is not the correct explanation of A.
- C. Both A and R are not correct.
- D. A is not correct but R is correct.

**Answer: A**

 [View Text Solution](#)

**3. Assertion (A) :** Nitration of benzene with nitric acid requires the use of concentrated sulphuric acid.

**Reason (R) :** The mixture of concentrated sulphuric acid and concentrated nitric acid produces the electrophilic  $NO_2^+$ .

- A. Both A and R are correct and R is the correct explanation of A.
- B. Both A and R are correct and R is not the correct explanation of A.
- C. Both A and R are not correct.
- D. A is not correct but R is correct.

**Answer: A**



[View Text Solution](#)

4. Assertion (A) : Among isomeric pentanes, 2,2-dimethyl-pentane has highest boiling point.

Reason (R) : Branching does not affect the boiling point.

- A. Both A and R are correct and R is the correct explanation of A.
- B. Both A and R are correct and R is not the correct explanation of A.
- C. Both A and R are not correct.
- D. A is not correct but R is correct.

**Answer: C**



[View Text Solution](#)

1. An alkyl halide  $C_5H_{11}Br$  (A) reacts with ethanolic KOH to give an alkene 'B', which reacts with  $Br_2$  to give a compound 'C', which on dehydrobromination gives an alkyne 'D'. On treatment with sodium metal in liquid ammonia one mole of 'D' gives one mole of the sodium salt of 'D' and half a mole of hydrogen gas. Complete hydrogenation of 'D' yields a straight chain alkane. Identify A, B, C and D. Give the reactions involved.

 [View Text Solution](#)

2. 896 mL vapour of a hydrocarbon 'A' having carbon 87.80% and hydrogen 12.19% weighs 3.28 g at STP. Hydrogenation of 'A' gives 2-methyl pentane. Also 'A' on hydration in the presence of  $H_2SO_4$  and  $HgSO_4$  gives a ketone 'B' molecular formula  $C_6H_{12}O$ . The ketone 'B' gives a positive iodoform test. Find the structure of 'A' and give the reactions involved.

 [View Text Solution](#)

3. An unsaturated hydrocarbon 'A' adds two molecules of  $H_2$  and on reductive ozonolysis gives butane-1, 4-dial, ethanal and propanone. Give the structure of 'A', write its IUPAC name and explain actions involved.

 [View Text Solution](#)

4. In the presence of peroxide addition of HBr to propene takes place according to Anti-Markovnikov's rule but peroxide effect is not seen in the case of HCl and HI. Explain.

 [View Text Solution](#)

## Questions For Module Section A

1. Give structure and IUPAC name of any one isomer of compound possessing only hydrogen with molecular formula  $C_5H_{12}$ .

 [View Text Solution](#)

2. Give chemical reaction to convert bromoethane into alkane having double carbon atoms.

 [View Text Solution](#)

3. Give IUPAC name and product structure obtained from the reaction of but-1-ene with HBr in presence of peroxide.

 [View Text Solution](#)

4. 

Give IUPAC name of 'X' in above reaction.

 [View Text Solution](#)

5. Give classification of given groups into O/P and m-directing groups :  
 $-CHO$ ,  $-C_2H_5$ ,  $-SO_3H$  and  $-NH_2$ .



[View Text Solution](#)

6. Give total number of  $\sigma$  and  $\pi$ -bonds present in acetophenone.



[View Text Solution](#)

## Questions For Module Section B

1. Explain chemical reaction of ozonolysis of propene.



[View Text Solution](#)

2. Give reaction for the preparation of benzene from benzoic acid and phenol.



[View Text Solution](#)

## Questions For Module Section C

1. Explain , among benzene, m-dinitrobenzene and toluene whose nitration is easier ?

 [View Text Solution](#)

2. "Benzene posses double bond though it is stable". Explain.

 [View Text Solution](#)

## Questions For Module Section D

1. Give the reaction for the preparation of following from propene.

(i) 2,2-dibromopropane (ii) Propanone

(iii) Propane and (iv) Propen-2-ol

 [View Text Solution](#)

