Multiple Choice Questions

Classification, Nomenclature and Isomer

[MHT-CET 2020]

1. How many isomers of monobromo derivatives are obtained on bromination of following compound ?

a) 2 b) 5 c) 3 d) 4

2. What is molecular formula of 3-bromopropene ?

a) C_3H_3Br b) C_3H_6Br c) C_3H_7Br d) C_3H_5Br

3. What is molecular formula of allyl chloride ?

a) C_3H_6Cl b) C_3H_3Cl c) C_3H_7Cl d) C_3H_5Cl

4. The IUPAC name of isobutyl bromide is

a) 2-bromo-1-methylpropane b) 2-bromo-2-methylpropane
c) 1-bromo-2-methylpropane d) 2-methyl-1-bromopropane

5. Identify the neohexyl chloride from the following :

a) $(CH_3)_3C-CH_2-CH_2-Cl$ b) $(CH_3)_2CH-CH_2-CH_2-CH_2-Cl$

c) $CH_3-(CH_2)_4-CH_2-Cl$ d) $(CH_3)_3C-\underset{\underset{Cl}{|}}{CH}-CH_3$

6. The common name of 1–Chloro-2, 2–dimethylpropane is

a) isopentyl chloride b) n-pentyl chloride
c) isopropyl chloride d) neo-pentyl chloride

7. IUPAC name of isobutyl chloride is

a) 2-chloro-2-methylpropane b) 2-chlorobutane
c) 1-chloro-2-methylpropane d) 2-chloropropane

8. What is IUPAC name of sym-trichlorobenzene ?

a) 1, 3, 4-trichlorobenzene b) 1, 2, 4-trichlorobenzene
c) 1, 2, 3 - trichlorobenzene d) 1, 3, 5 - trichlorobenzene

9. What is IUPAC name of neopentyl chloride ?

a) 1-Chloro-2, 2-dimethylpropane b) 3-Chloro-2, 2-dimethylpropane
c) 1-Chloro-3-methylbutane d) 1-Chloropentane

10. What is molecular formula of allyl bromide ?

a) C_3H_6Br b) C_2H_3Br c) C_3H_5Br d) C_2H_4Br

[MHT-CET 2021]

11. Which among the following is an allylic halide ?

a) 1-Chloropene b) 2-Chloropropene
c) 3-Chloropropene d) 4-Chlorobut-1-ene

12. Which among the following is haloalkyne ?

a) Halogen atom is bonded to sp^3 hybridized carbon atom of aromatic ring.
b) Halogen atom is bonded to sp^3 hybridized carbon atom next to C=C double bond in aliphatic chain.
c) Halogen atom is bonded to sp hybridized carbon atom in aliphatic chain
d) Halogen atom is bonded to sp^2 hybridized carbon atom in aliphatic chain

13. Which of the following statements is true for vinylic halide ?
a) Halogen atom is bonded to 'sp' hybridized carbon atom.
b) Halogen atom is bonded to 'sp^2' hybridized carbon atom of aromatic ring.
c) Halogen atom is bonded to 'sp^3' hybridized carbon atom next to carbon-carbon double bond.
d) Halogen atom is bonded to 'sp^2' hybridized carbon atom of aliphatic chain.

14. Which among the following is benzylic halide ?
a) 1-Chloro-2-phenyl ethane
b) Chlorobenzene
c) Chlorophenylmethane
d) 4-Chlorotoluene

15. The IUPAC name of neopentyl bromide is
a) 3-Bromo-2, 2-dimethylpropane
b) 2-Bromo-2-methylbutane
c) 1-Bromo-2, 2-dimethylpropane
d) 1-Bromo-2-methylbutane

16. Which among the following is NOT benzylic halide ?
a) 2-Bromo-2-phenylpropane
b) Bromophenyl methane
c) 1-Bromo-1-Phenylethane
d) 1-Bromo-2-phenylbutane

17. Which of the following is an organometallic compound ?
a) R – O – Na
b) R – Mg – X
c) RCOOAg
d) R–COOK

[MHT-CET 2022]

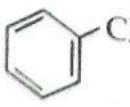
18. Which among the following reactions does NOT form alkyl halides ?
a) Alcohol reacts with halogen in presence of sunlight.
b) Alcohol reacts with HI in presence of NaI / H_3PO_4.
c) Alcohol reacts with HCl in presence of anhydrous $ZnCl_2$.
d) Alcohol reacts with HBr in presence of NaBr, H_2SO_4.

19. Which among the following compounds is vinylic halide ?
a) Bromoethane
b) 1-Chloroethene
c) 2-Chloropropane
d) 2-Bromo-2-methylpropane

20. Identify tertiary alkyl halide from the following.
a) $(CH_3)_3 - C - CH_2 - Br$
b) $CH_3 - (CH_2)_4 - CH_2 - Br$
c) $(CH_3)_2 - CH - CH_2 - Br$
d) $(CH_3)_3 - C - Br$

21. Which among the following examples of halogen derivatives does NOT correctly match with its type of compound ?
a) Haloarene : Chlorobenzene
b) Allylic halide : 1–Chloroethene
c) Haloalkane : Methyl chloride
d) Benzylic halide : Benzyl chloride

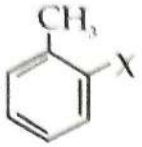
22. IUPAC name of the compound $(CH_3)_2 - CH - CH_2 - Br$ is
a) Isobutyl bromide
b) 1-Bromo-2-methylpropane
c) 3-Bromo-2-methylpropane
d) 2-Methyl-1-bromopropane

23. What is the IUPAC name of  ?
a) Iodomethyl benzene
b) Benzyl iodide
c) Iodophenyl methane
d) Methyl iodobenzene

24. Which among the following is NOT an example of monohalogen compounds ?
a) 1, 2-Dibromoethane
b) 2-Methyl-2-bromopropane
c) 2-Bromopentane
d) Chlorobenzene

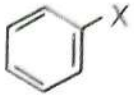
25. The IUPAC name of neopentyl chloride is
a) 1-Chloro-2, 2-dimethylpropane
b) 2-Chloro-2-methylbutane
c) 1-Chloropentane
d) 2-Chl...

26. Which among the following halogen derivatives does not correctly match with its structure?

a) Haloarene : 

b) Vinylic halide : 

c) Haloalkane : $(R)_3 - C - X$

d) Benzylic halide : 

27. Identify dihalogen compound from the following.

a) 1, 1-Dichloroethane b) n-Propyl bromide c) Ethyl bromide d) 2-Chloropropane

28. Which of the following is not an allylic halide ?

a) 4-Bromopent-2-ene b) 3-Bromo-2-methylbut-1-ene

c) 1-Bromobut-1-ene d) 3-Bromoprop-1-ene

29. What is IUPAC name of neo pentyl chloride ?

a) 1-Chloro-2, 2-dimethylpropane b) 2-Chloro-2-methylpropane

c) 2, 3-Dichloropentane d) 2-Chloro-2-methylbutane

30. Which among the following statements regarding halogen compounds is NOT true?

a) Para isomers of dihalobenzene can easily pack closely in crystal lattice.

b) Structure of para isomer of dihalobenzene is symmetrical.

c) Para isomer of dihalobenzene melts at lower temperature than meta isomer.

d) Aryl halides are insoluble in water.

31. Identify allylic halide from following.

a) C_6H_5X b) $C_6H_5CH_2X$ c) $H_2C{=}CH{-}CH_2X$ d) $H_2C = CHX$

Methods of preparation

[MHT-CET 2004]

32. Best method of preparing alkyl chloride is

a) $ROH + SOCl_2 \longrightarrow$ b) $ROH + PCl_5 \longrightarrow$

c) $ROH + PCl_5 \longrightarrow$ d) $ROH + HCl \xrightarrow{\text{Anhy } ZnCl_2}$

[MHT-CET 2005]

33. 2–propanol + NaBr $\xrightarrow{\text{Reflux}}$ X. What is X ?

a) 2–Bromopropane b) Propane c) Propene d) Propanone

[MHT-CET 2014]

34. 'X' is an optically active alkane having lowest molecular mass, predict the structure of the major product obtained on monochlorination of 'X'.

a) $CH_3-CH_2-CH_2-\underset{\underset{Cl}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_2-CH_3$ b) $CH_3-CH_2-CH_2-\overset{\overset{CH_3}{|}}{CH}-\underset{\underset{Cl}{|}}{CH}-CH_3$

c) $CH_3-CH_2-CH_2-\overset{\overset{CH_3}{|}}{CH}-CH_2-CH_2-Cl$ d) $Cl-CH_2-CH_2-CH_2-\overset{\overset{CH_3}{|}}{CH}-CH_2-CH_3$

[MHT-CET 2017]

35. The conversion of ethyl bromide to ethyl iodide using sodium iodide and dry acetone, this reaction is known as
a) Swarts reaction
b) Finkelstein reaction
c) Sandmeyer reaction
d) Stephen reaction

[MHT-CET 2018]

36. With which halogen the reactions of alkanes are explosive ?
a) Fluorine b) Chlorine c) Bromine d) Iodine

[MHT-CET 2019]

37. Which reaction is useful in exchange of halogen in alkyl chloride by iodide ?
a) Reimer - Tiemann reaction
b) Williamson synthesis
c) Finkelstein reaction
d) Wurtz reaction

[MHT-CET 2020]

38. The number of possible monohalogen derivatives for the alkyl halide having molecular formula C_4H_9X is
a) 3 b) 4 c) 1 d) 2

39. Identify the name of reaction in which alkyl fluorides are prepared by heating alkyl bromide with metallic fluorides.
a) Wurtz reaction
b) Swartz reaction
c) Finkelstein reaction
d) Sandmeyer reaction

40. Identify 'A' in the following reaction : $C_2H_5OH + HCl \xrightarrow{\Delta} C_2H_5Cl + H_2O$
a) $NaNO_2$ b) pyridine c) conc. H_2SO_4 d) anhydrous $ZnCl_2$

41. Identify 'B' in the following series of reactions.

$$\text{Ethanol} \xrightarrow[H_2SO_4.\Delta]{NaBr} A \xrightarrow[\text{Dry ether}]{Mg} B$$

a) Ethyl magnesium bromide
b) Ethene
c) Sodium ethoxide
d) Ethyl bromide

42. Which among the following methods is NOT suitable for the preparation of alkyl chlorides ?
a) Addition of HCl to alkene
b) Treating alcohols with Lucas reagent
c) Chlorination of alkanes in presence of sunlight
d) By heating alcohols with thionyl chloride

43. The reaction $2R - Cl + CoF_2 \longrightarrow 2R - F + CoCl_2$ is an example of .....
a) Wurtz - Fittig reaction
b) Finkelstein reaction
c) Sandmeyer's reaction
d) Swarts reaction

44. Which of the following pairs of aryl halides can NOT be prepared directly by electrophilic substitution ?
a) Aryl bromide and aryl iodide
b) Aryl chloride and aryl bromide
c) Aryl fluoride and aryl chloride
d) Aryl iodide and aryl fluoride

55. Which of the following is NOT obtained when a mixture of Iodoethane and 1-Iodopropane is treated with sodium metal in dry ether ?
a) Propane b) Butane c) Pentane d) Hexane

Optical isomerism

[MHT-CET 2008]

56. Which of the following compounds is not chiral ?
a) 1-chloro-2-methylpentane b) 2-chloropentane
c) 1-chloropentane d) 3-chloro-2-methylpentane

[MHT-CET 2010]

57. What is the chemical composition of Nicol's prism ?
a) Al_2O_3 b) $CaSO_4$ c) $CaCO_3$ d) Na_3AlF_6

58. If 'n' represents total number of asymmetric carbon atoms in a compound, the possible number of optical isomers of the compound is
a) 2n b) n^2 c) 2^n d) 2n + 2

[MHT-CET 2011]

59. Which among the following compounds in crystalline form is used for making Nicol's prism ?
a) $CaSO_4$ b) Al_2O_3 c) Na_2AlF_6 d) $CaCO_3$

60. Nicol's prism is made of
a) $CaSO_4$ b) $CaSiO_3$ c) $CaCO_3$ d) $Ca_3(PO_4)_2$

[MHT-CET 2020]

61. Calcite crystals used in Nicol's prism are formed of
a) CaC_2 b) $CaCl_2$ c) $CaCO_3$ d) CaO

62. Which one of the following compounds is optically active ?
a) 2-Chloropropane b) 3-Chloropentane
c) 2-Chloro-2-methylbutane d) 2-Chloropentane

63. Which among the following compounds is NOT optically active ?
a) 3-Chloro-2-methylpentane b) 2-Chloro-3-methylpentane
c) 2-Chloropentane d) 3-Chloropentane

64. The number of optical isomers possible for 3, 4-dichloropentan-2-ol is
a) Eight b) Four c) Sixteen d) Two

65. The number of asymmetric carbon atoms present in 2, 3-dichloro-4-methylpentane is
a) Four b) Three c) Two d) One

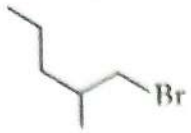
66. How many asymmetric carbon atoms are present in a molecule if it has 16 optical isomers ?
a) 3 b) 5 c) 2 d) 4

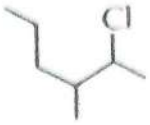
67. How many asymmetric carbon atoms are present in neopentyl chloride ?
a) Zero b) Three c) Two d) One

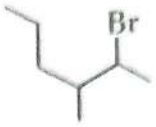
68. Which of the following is an optically inactive compound ?
a) 2-Bromo-3-methylbutane b) 2, 2-dichlorobutane
c) 2-Hydroxypropanoic acid d) Butan-2-ol

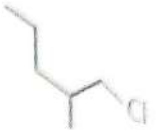
[MHT-CET 2022]

103. Identify the alkyl halide that undergoes S_N2 reaction most fastly.

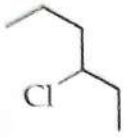
a) 

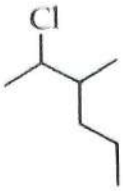
b) 

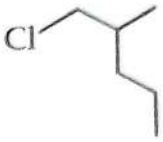
c) 

d) 

104. Identify the compound that undergoes S_N1 mechanism most fastly.

a) 

b) 

c) 

d) 

105. Choose the false statement from following about S_N1 reaction mechanism.

a) Concentration of nucleophile does not affect the rate of reaction.

b) Intermediate formed during the reaction is a carbocation

c) It is single step mechanism

d) Racemization takes place if reaction is carried out at chiral carbon in optically active substance.

106. Which among the following statements is NOT correct about S_N2 reaction mechanism

a) Bond formation and bond breaking occur simultaneously.

b) S_N2 mechanism is observed in tertiary alkyl halides.

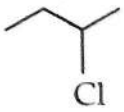
c) Nucleophile attacks the carbon atom from the side opposite to halogen

d) Rate of reaction is dependent on the concentration of nucleophile.

107. Which among the following compounds undergoes S_N2 reaction fastest ?

a) 

b) 

c) 

d) 

108. Which of the following statements is NOT true about S_N1 reaction ?

a) Inversion of configuration takes place.

b) Racemization takes place in chiral alkyl halides.

c) Second step in S_N1 reaction is fast.

d) The nucleophile does not affect rate of reaction.

109. What type of reaction converts alkyl halides into alcohols ?

a) Elimination

b) Addition

c) Dehydrohalogenation

d) Substitution

110. Which of the following equations indicates the rate of S_N2 reaction ?

a) rate = $k\,[(CH_3)_3 - C - Br]$

b) rate = $k\,[CH_3Br]\,[OH^-]$

c) rate = $k\,[CH_3Br]$

d) rate = $k\,[OH^-]$

125. Identify 'B' in the following reaction.

$$\text{2 - Bromobutane} \xrightarrow[\Delta]{\text{KOH alco.}} A \xrightarrow{HI} B$$

a) But-1-ene b) 2-Iodobutane c) 1-Iodobutane d) Butan-2-ol

[MHT-CET 2021]

126. Identify reactant (A) used in the following conversion.

$$\text{Chlorobenzene} + A \xrightarrow[AlCl_3]{\text{anhydrous}} \text{1 - Chloroacetophenone} + \text{4 - Chloroacetophenone}$$

a) Ethyl acetate b) Acetophenone c) Acetic acid d) Acetyl chloride

127. When tert-butyl bromide is heated with silver fluoride, the major product obtained is

a) 1-Fluorobutane b) 2-Fluoro-2-methylpropane

c) 2-Fluoro-2-methylpropene d) 2-Fluorobutane

128. Identify the reagent used in following conversion

$$\text{Chloroethane} \xrightarrow{A} \text{Nitro ethane}$$

a) Sodium nitrite b) Silver nitrite

c) Potassium nitrite d) Potassium cyanide

129. Which of the following is likely to undergo racemization during alkaline hydrolysis?

a) $CH_3-CH_2-\underset{\underset{Cl}{|}}{CH}-CH_2-CH_3$ b) $(CH_3)_3C-CH_2-Cl$

c) $CH_3-\underset{\underset{Cl}{|}}{CH}-CH_3$ d) $CH_3-CH_2-\underset{\underset{Cl}{|}}{CH}-CH_3$

130. When 2-Chlorobutane is boiled with concentrated alcoholic solution of KOH, the major product formed is

a) But-1-ene b) But-2-ene c) Butan-2-ol d) Butan-1-ol

131. Identify the reagent (A) in the following conversion.

$$\text{Alkyl halide} \xrightarrow{A} \text{Alkyl nitrite}$$

a) $AgNO_2$ b) KNO_3 c) $NaNO_3$ d) KNO_2

[MHT-CET 2022]

132. Identify the product obtained when bromoethane is heated with excess of alcoholic ammonia under pressure.

a) Ethanamine b) Ethanol c) Ethene d) Nitro ethane

133. Which among the following compounds converts alkyl halides to nitro alkanes ?

a) Potassium nitrite b) alc. Silver cyanide

c) alc. Potassium cyanide d) Silver nitrite

134. Identify the product A in the following reaction.

$$C_2H_5Br + \text{aq. KOH} \rightarrow A + KBr$$

a) Ethanol b) Potassium ethoxide

c) Ethane d) Ethene