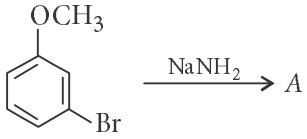
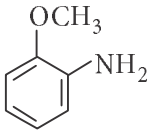
Chapter

24

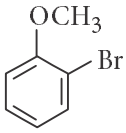
Haloalkanes and Haloarenes

1. Identify *A* and predict the type of reaction.

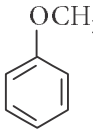


(a) 

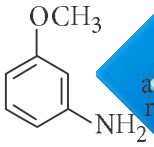
and elimination addition reaction

(b) 

and cine substitution reaction

(c) 

and cine substitution

(d) 

and substitution reaction

(NEET 2017)

2. Consider the reaction,

$CH_3CH_2CH_2Br + NaCN \rightarrow CH_3CH_2CH_2CN + NaBr$

This reaction will be the fastest in

(a) ethanol (b) methanol

(c) *N*, *N*′-dimethylformamide (DMF)

(d) water. *(NEET-II 2016)*

3. Two possible stereo-structures of $CH_3CHOHCOOH$, which are optically active, are called

(a) atropisomers (b) enantiomers

(c) mesomers (d) diastereomers.

(2015)

4. In an S_N1 reaction on chiral centres, there is

(a) inversion more than retention leading to partial racemisation

(b) 100% retention (c) 100% inversion

(d) 100% racemisation. *(2015)*

5. The reaction of $C_6H_5CH{=}CHCH_3$ with HBr produces

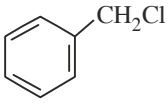
(a) $C_6H_5CH_2CH_2CH_2Br$

(b) 

(c) $C_6H_5\underset{\displaystyle Br}{\underset{|}{C}}HCH_2CH_3$

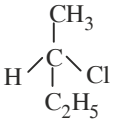
(d) $C_6H_5CH_2\underset{\displaystyle Br}{\underset{|}{C}}HCH_3$ *(2015, Cancelled)*

6. Which of the following compounds will undergo racemisation when solution of KOH hydrolyses?

(i) 

(ii) $CH_3CH_2CH_2Cl$

(iii) $H_3C-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2Cl$

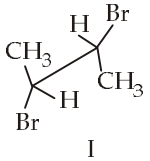
(iv) 

(a) (i) and (ii) (b) (ii) and (iv)

(c) (iii) and (iv) (d) (i) and (iv)

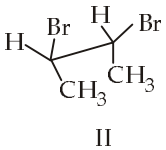
(2014)

7. Given:



I

and

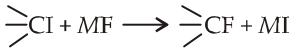


II

I and II are

(a) identical
(b) a pair of conformers
(c) a pair of geometrical isomers
(d) a pair of optical isomers
(Karnataka NEET 2013)

8. In the replacement reaction

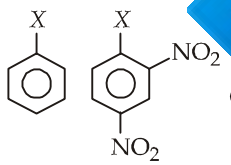


The reaction will be most favourable if *M* happens to be
(a) Na (b) K
(c) Rb (d) Li *(Mains 2012)*

9. Consider the reactions.
(i) $(CH_3)_2CH - CH_2Br \xrightarrow{C_2H_5OH} (CH_3)_2CH - CH_2OC_2H_5 + HBr$
(ii) $(CH_3)_2CH - CH_2Br \xrightarrow{C_2H_5O^-} (CH_3)_2CH - CH_2OC_2H_5 + Br^-$
The mechanisms of reactions (i) and (ii) are respectively
(a) S_N1 and S_N2 (b) S_N1 and S_N1
(c) S_N2 and S_N2 (d) S_N2 and S_N1
(Mains 2011)

10. Which one is most reactive towards S_N1 reaction?
(a) $C_6H_5CH(C_6H_5)Br$
(b) $C_6H_5CH(CH_3)Br$
(c) $C_6H_5C(CH_3)(C_6H_5)Br$
(d) $C_6H_5CH_2Br$ *(2010)*

11. The correct order of increasing reactivity of



$(CH_3)_3C-X$ $(CH_3)_2CH-X$

I II III IV

C—*X* bond towards nucleophile in the following compounds is
(a) I < II < IV < III (b) II < III < I < IV
(c) IV < III < I < II (d) III < II < I < IV
(2010)

12. In the following reaction

$C_6H_5CH_2Br \xrightarrow[2.\ H_3O^+]{1.\ Mg,\ Ether} X$, the product '*X*' is
(a) $C_6H_5CH_2OCH_2C_6H_5$ (b) $C_6H_5CH_2OH$
(c) $C_6H_5CH_3$
(d) $C_6H_5CH_2CH_2C_6H_5$ *(Mains 2010)*

13. Which of the following reactions is an example of nucleophilic substitution reaction?
(a) $2RX + 2Na \rightarrow R - R + 2NaX$
(b) $RX + H_2 \rightarrow RH + HX$
(c) $RX + Mg \rightarrow RMgX$
(d) $RX + KOH \rightarrow ROH + KX$ *(2009)*

14. How many stereoisomers does this molecule have?
$CH_3CH{=}CHCH_2CHBrCH_3$
(a) 8 (b) 2
(c) 4 (d) 6 *(2008)*

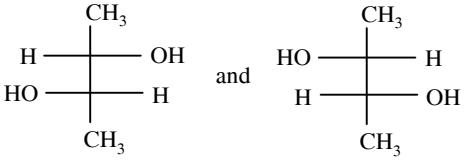
15. In a S_N2 substitution reaction of the type
$R{-}Br + Cl^- \xrightarrow{DMF} R{-}Cl + Br^-$
which one of the following has the highest relative rate?
(a) $CH_3-\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\underset{|}{\overset{|}{C}}}}-CH_2Br$ (b) CH_3CH_2Br
(c) $CH_3CH_2CH_2Br$
(d) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2Br$ *(2008)*

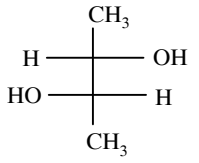
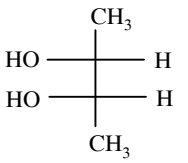
16. If there is no rotation of plane polarised light by a compound in a specific solvent, though to be chiral, it may mean that
(a) the compound is certainly meso
(b) there is no compound in the solvent
(c) the compound may be a racemic mixture
(d) the compound is certainly a chiral.
(2007)

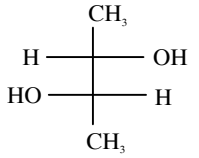
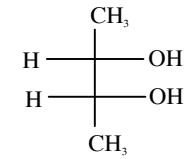
17. Which of the following is not chiral?
(a) 2-Hydroxypropanoic acid
(b) 2-Butanol
(c) 2,3-Dibromopentane
(d) 3-Bromopentane *(2006)*

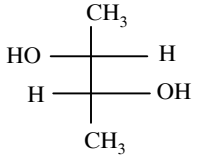
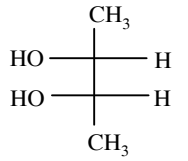
18. Which of the following is least reactive in a nucleophilic substitution reaction?
(a) $(CH_3)_3C-Cl$ (b) $CH_2{=}CHCl$
(c) CH_3CH_2Cl
(d) $CH_2{=}CHCH_2Cl$ *(2004)*

19. Which of the following pairs of compounds are enantiomers?
(a)



(b)  and 

(c)  and 

(d)  and 

(2003)

20. Reactivity order of halides for dehydrohalogenation is
(a) $R-F > R-Cl > R-Br > R-I$
(b) $R-I > R-Br > R-Cl > R-F$
(c) $R-I > R-Cl > R-Br > R-F$
(d) $R-F > R-I > R-Br > R-Cl$ *(2002)*

21. $CH_3CH_2Cl \xrightarrow{NaCN} X \xrightarrow{Ni/H_2} Y \xrightarrow{\text{acetic anhydride}} Z$

Z in the above reaction sequence is
(a) $CH_3CH_2CH_2NHCOCH_3$
(b) $CH_3CH_2CH_2NH_2$
(c) $CH_3CH_2CH_2CONHCH_3$
(d) $CH_3CH_2CH_2CONHCOCH_3$ *(2002)*

22. $CH_3-CH_2-\underset{\displaystyle Cl}{\underset{|}{CH}}-CH_3$ obtained by chlorination of *n*-butane will be
(a) meso form (b) racemic mixture
(c) *d*-form (d) *l*-form. *(2001)*

23. An organic compound A (C_4H_9Cl) on reaction with Na/diethyl ether gives a hydrocarbon which on monochlorination gives only one chloro derivative then, A is
(a) *t*-butyl chloride (b) *s*-butyl chloride
(c) *iso*-butyl chloride (d) *n*-butyl chloride. *(2001)*

24. A compound of molecular formula C_7H_{16} shows optical isomerism, compound will be
(a) 2,3-dimethylpentane
(b) 2,2-dimethylbutane (c) 2-methylhexane
(d) none of these. *(2001)*

25. Ethyl chloride is converted into diethyl ether by
(a) Perkins reaction
(b) Grignard reaction
(c) Wurtz synthesis
(d) Williamson's synthesis *(1999)*

26. Which of the following compounds is not chiral?
(a) CH_3CHDCH_2Cl (b) CH_3CH_2CHDCl
(c) $DCH_2CH_2CH_2Cl$ (d) $CH_3CHClCH_2D$ *(1998)*

27. Replacement of Cl of chlorobenzene to give phenol requires drastic conditions. But chlorine of 2,4-dinitrochlorobenzene is readily replaced because
(a) NO_2 donates e^- at *meta* position
(b) NO_2 withdraws e^- from *ortho*/*para* positions
(c) NO_2 make ring electron rich at *ortho* and *para*
(d) NO_2 withdraws e^- from *meta* position. *(1997)*

28. The alkyl halide is converted into an alcohol by
(a) elimination
(b) dehydrohalogenation
(c) addition
(d) substitution. *(1997)*

29. Reaction of *t*-butyl bromide with sodium methoxide produces
(a) sodium *t*-butoxide
(b) *t*-butyl methyl ether
(c) isobutane (d) isobutylene. *(1994)*

30. Grignard reagent is prepared by the reaction between
(a) magnesium and alkane
(b) magnesium and aromatic hydrocarbon
(c) zinc and alkyl halide
(d) magnesium and alkyl halide. *(1994)*

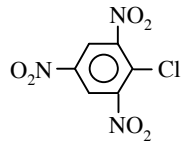
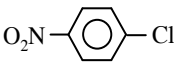
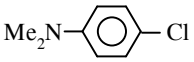
31. Benzene reacts with *n*-propyl chloride in the presence of anhydrous $AlCl_3$ to give
(a) 3-propyl-1-chlorobenzene
(b) *n*-propylbenzene
(c) no reaction
(d) isopropylbenzene. *(1993)*

32. Industrial preparation of chloroform employs acetone and
(a) phosgene
(b) calcium hypochlorite
(c) chlorine gas
(d) sodium chloride. *(1993)*

33. Chlorobenzene reacts with Mg in dry ether to give a compound (*A*) which further reacts with ethanol to yield
(a) phenol
(b) benzene
(c) ethyl benzene
(d) phenyl ether. *(1993)*

34. When chlorine is passed through propene at 400°C, which of the following is formed?
(a) PVC
(b) Allyl chloride
(c) Propyl chloride
(d) 1, 2-Dichloroethane *(1993)*

35. Which chloro derivative of benzene among the following would undergo hydrolysis most readily with aqueous sodium hydroxide to furnish the corresponding hydroxy derivative?

(a) 
(b) 
(c) 
(d) C_6H_5Cl *(1989)*

36. Which of the following is an optically active compound?
(a) 1-Butanol (b) 1-Propanol
(c) 2-Chlorobutane
(d) 4-Hydroxyheptane *(1989)*

37. Phosgene is a common name for
(a) phosphoryl chloride
(b) thionyl chloride
(c) carbon dioxide and phosphine
(d) carbonyl chloride. *(1988)*

38. Which one is formed when sodium phenoxide is heated with ethyl iodide?
(a) Phenetole
(b) Ethyl phenyl alcohol
(c) Phenol
(d) None of these *(1988)*

Answer Key

1.	(d)	**2.**	(c)	**3.**	(b)	**4.**	(a)	**5.**	(c)	**6.**	(None)		**7.**	(b)	**8.**	(c)	**9.**	(c)
10.	(c)	**11.**	(a)	**12.**	(c)	**13.**	(d)	**14.**	(c)	**15.**	(b)	**16.**	(a)	**17.**	(d)	**18.**	(b)	**19.**	(a)
20.	(b)	**21.**	(a)	**22.**	(b)	**23.**	(a)	**24.**	(a)	**25.**	(d)	**26.**	(c)	**27.**	(b)	**28.**	(d)	**29.**	(d)
30.	(d)	**31.**	(d)	**32.**	(b)	**33.**	(b)	**34.**	(b)	**35.**	(a)	**36.**	(c)	**37.**	(d)	**38.**	(a)		