24 Haloalkanes and Haloarenes

Conceptual MCQs

1. Cl_2 reacts with CS_2 in presence of I_2 to form :
(a) $CHCl_3$ (b) CCl_4
(c) C_2H_5Cl (d) Cl_3C-NO_2

2. $AgNO_3$ does not give precipitate with chloroform because:
(a) $CHCl_3$ does not ionise in water.
(b) $CHCl_3$ is insoluble in water.
(c) $AgNO_3$ is insoluble in $CHCl_3$.
(d) $CHCl_3$ is an organic compound.

3. The total number of acyclic isomers including the stereoisomers with the molecular formula C_4H_7Cl is :
(a) 11 (b) 12 (c) 9 (d) 10

4. The product of reaction between alcoholic silver nitrite with ethyl bromide is :
(a) ethene (b) ethane
(c) ethyl nitrile (d) nitroethane

5. Full name of DDT is :
(a) 1, 1, 1-trichloro-2, 2-bis(*p*-chlorophenyl) ethane
(b) 1, 1-dichloro-2, 2-diphenyl trimethylethane
(c) 1, 1-dichloro-2, 2-diphenyl trichloroethane
(d) None of these

6. If chloroform is left open in air in the presence of sunlight, it gives :
(a) carbon tetrachloride (b) carbonyl chloride
(c) mustard gas (d) lewisite

7. Gem-dibromide is :
(a) $CH_3CH(Br)CH_2(Br)$ (b) $CH_3CBr_2CH_3$
(c) $CH_2(Br)CH_2CH_2$ (d) CH_2BrCH_2Br

8. The product formed by heating iodoform with KOH is :
(a) HCHO (b) HCOOK
(c) CH_3COOK (d) CH_3CHO

9. Alkyl halides react with dialkyl copper reagents to give :
(a) alkenyl halides (b) alkanes
(c) alkyl copper halides (d) alkenes

10. Which of the following is a primary halide?
(a) Isopropyl iodide (b) Secondary butyl iodide
(c) Tertiary butyl bromide (d) Neo hexyl chloride

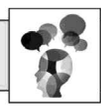
11. Vinyl chloride undergoes :
(a) only addition reactions
(b) only elimination reactions
(c) substitution reactions
(d) both (a) and (b)

12. Freons are :
(a) $CClF_3$ (b) $CFCl_3$
(c) CCl_2F_2 (d) All of these

13. *n*-Propyl bromide on treatment with ethanolic potassium hydroxide produces :
(a) propane (b) propene
(c) propyne (d) propanol

14. Chlorobenzene on heating with NH_3 under pressure in the presence of cuprous chloride gives :
(a) benzamide
(b) nitrobenzene
(c) aniline
(d) *o*- and *p*-chloroaminobenzene

15. The reaction of $C_6H_5N_2^+Cl^-$ with CuCl gives :
(a) C_6H_5Cl (b) C_6H_6
(c) $C_6H_5-C_6H_5$ (d) $C_6H_4Cl_2$



Application Based MCQs

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

17. When hydrochloric acid gas is treated with propene in presence of benzoyl peroxide, it gives :
(a) 2-chloropropane (b) allyl chloride
(c) n-propyl chloride. (d) No reaction occurs

18. 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

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

20. Tertiary alkyl halides are practically inert to substitution by S_N2 mechanism because of
(a) steric hindrance (b) inductive effect
(c) instability (d) insolubility

21. 2-Bromopentane is heated with potassium ethoxide in ethanol. The major product obtained is :
(a) 2-ethoxypentane (b) pentene-1
(c) trans-2-pentene (d) cis-pentene-2

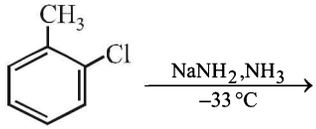
22. Identify Z in

$$CH_3CH_2CH_2Br \xrightarrow{\text{aq. NaOH}} X \xrightarrow{Al_2O_3} Y \xrightarrow{Cl_2/H_2O} Z$$

(a) Mixture of $CH_3CHClCH_2Cl$ and $CH_3CHOHCH_2Cl$
(b) $CH_3CHOHCH_2Cl$
(c) $CH_3CHClCH_2OH$
(d) $CH_3CHClCH_2Cl$

23. Elimination of bromine from 2-bromobutane results in the formation of –
(a) predominantly 2-butyne
(b) predominantly 1-butene
(c) predominantly 2-butene
(d) equimolar mixture of 1 and 2-butene

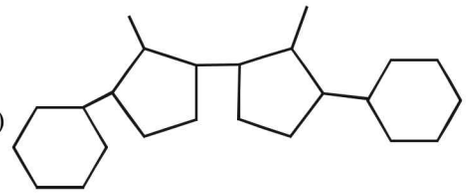
24. Identify the product of the following reaction.

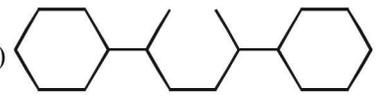


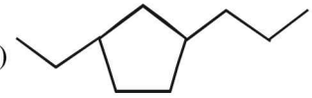
(a) only ortho-methyl aniline
(b) ortho-methyl aniline and meta-methyl aniline
(c) ortho-methyl aniline and para-methyl aniline
(d) meta-and para-methyl aniline

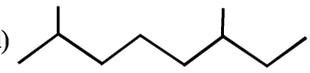
25. The reaction of tert-butyl bromide with sodium methoxide produces mainly –
(a) iso-butane (b) iso-butylene
(c) tert-butyl methyl ether (d) sodium tert butoxide

26. Compound which cannot be synthesized by Wurtz reaction using one type of halide only, is :

(a) 

(b) 

(c) 

(d) 

27. Ethylidene bromide on heating with metallic sodium in ether solution yields :
(a) ethene (b) ethyne (c) 2-butene (d) 1-butene

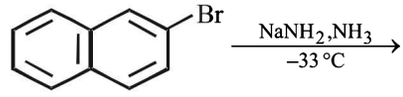
28. X in the following reaction is –

$$Br_2 + CH_3-\underset{\underset{H-C-CH_3}{||}}{C}-H \xrightarrow{CCl_4} X$$

(a) (+) 2, 3-Dibromobutane
(b) (–) 2, 3-Dibromobutane
(c) Rac. 2, 3-Dibromobutane
(d) Meso-2, 3-Dibromobutane

29. $(CH_3)_3CMgCl$ on reaction with D_2O produces :
(a) $(CH_3)_3CD$ (b) $(CH_3)_3OD$
(c) $(CD_3)_3CD$ (d) $(CD_3)_3OD$.

30. How many isomeric naphthylamines are expected in the following reaction ?



(a) two (b) only single product
(c) four (d) three

31. Isobutyl magnesium bromide with dry ether and ethyl alcohol gives :

(a) $CH_3\underset{\underset{CH_3}{|}}{C}HCH_2OH$ & CH_3CH_2MgBr

(b) $CH_3\underset{\underset{CH_3}{|}}{C}HCH_3$ & $MgBr(OC_2H_5)$

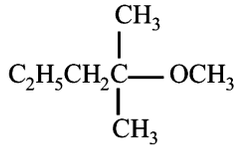
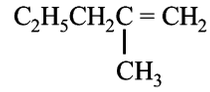
(c) $CH_3\underset{\underset{CH_3}{|}}{C}HCH=CH_2$ & $Mg(OH)Br$

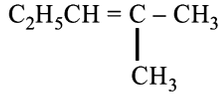
(d) $CH_3\underset{\underset{CH_3}{|}}{C}HCH_3$ & CH_3CH_2OMgBr

32. *o*-Methoxybromobenzene is treated with sodamide and then with ammonia. The product formed is :
(a) *o*-Methoxyaniline (b) Aniline
(c) Methoxybenzene (d) *m*-Methoxyaniline

33. During debromination of *meso*-2,3-dibromobutane, the major compound formed is :
(a) *n*-butane (b) 1-butene
(c) *cis*-2-butene (d) *trans*-2-butene

34. 2-Chloro-2-methylpentane on reaction with sodium methoxide in methanol yields:

(i)  (ii) 

(iii) 

(a) (iii) only (b) (i) and (ii)

(c) (i) and (iii) (d) All of these

35. Benzene reacts with *n*-propyl chloride in the presence of anhydrous $AlCl_3$ to give :

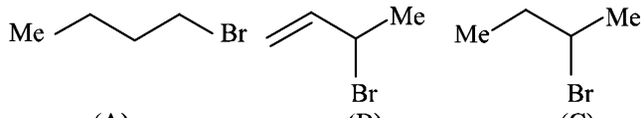
(a) 3 – Propyl – 1 – chlorobenzene

(b) *n*-Propylbenzene

(c) Isopropylbenzene.

(d) No reaction occurs

36. Consider the following bromides :



(A) (B) (C)

The correct order of S_N1 reactivity is

(a) B > C > A (b) B > A > C

(c) C > B > A (d) A > B > C

37. Bromobenzene reacts with Mg in dry ether to give a compound (A) which further reacts with ethanol to yield :

(a) phenol (b) benzene

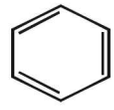
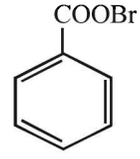
(c) ethylbenzene (d) phenyl ether.

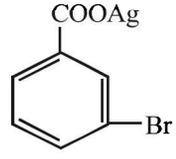
38. Iodoform can be prepared from all except :

(a) Ethyl methyl ketone (b) Isopropyl alcohol

(c) 3-Methyl 2-butanone (d) Isobutyl alcohol

39. Silver benzoate reacts with bromine to form :

(a)  (b) 

(c)  (d) C_6H_5Br

40. When phenyl magnesium bromide reacts with *tert* – butanol, the product would be :

(a) benzene (b) phenol

(c) *ter*–butylbenzene (d) *ter*–butyl phenyl ether

Skill Based MCQs

41. Isobutene $\xrightarrow[\text{peroxide}]{HBr}$ A $\xrightarrow{KCN}$

B $\xrightarrow{\text{dil. } H_2SO_4}$ C + inorganic salt D

C and D are :

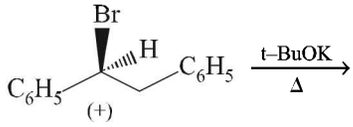
(a) $Me_2CH.CH_2COOH$, $(NH_4)_2SO_4$

(b) $Me_2CH.COOH$, $(NH_4)_2SO_4$

(c) $Me_2CH.CH_2COOK$, NH_4OH

(d) $Me_2CH.CH_2COOK$, K_2SO_4

42. The major product obtained in the following reaction is :



(a) $(\pm)C_6H_5CH(O^tBu)CH_2C_6H_5$

(b) $C_6H_5CH=CHC_6H_5$

(c) $(+)C_6H_5CH(O^tBu)CH_2C_6H_5$

(d) $(-)C_6H_5CH(O^tBu)CH_2C_6H_5$

43. In the following sequence of reactions

$CH_3CH_2OH \xrightarrow{P+I_2} A \xrightarrow[\text{ether}]{Mg} B \xrightarrow{HCHO}$

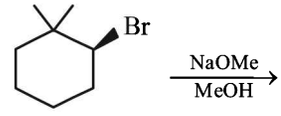
$C \xrightarrow{H_2O} D$

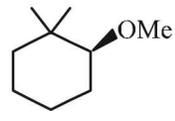
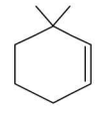
the compound D is :

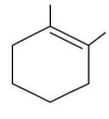
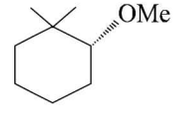
(a) propanal (b) butanal

(c) *n*-butyl alcohol (d) *n*-propyl alcohol.

44. The major product of the following reaction is :



(a)  (b) 

(c)  (d) 

45. Which of the following reagents react readily with bromobenzene ?

(a) $NaNH_2 / NH_3$ at $-33°C$

(b) $(CH_3)_2NH$ at. 25°C

(c) CH_3CH_2ONa at. 25°C

(d) NaCN / DMSO at. 25°C

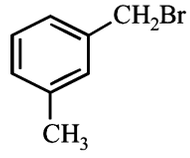
46. Identify Z in the following series.

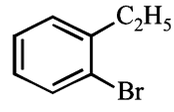
$$C_2H_5I \xrightarrow{\text{Alc. KOH}} X \xrightarrow{Br_2} Y \xrightarrow{KCN} Z$$

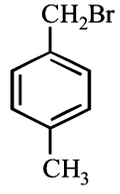
(a) CH_3CH_2CN (b) $NCCH_2–CH_2CN$

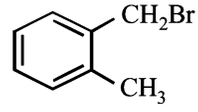
(c) $BrCH_2–CH_2CN$ (d) BrCH=CHCN

47. Compound (A), C_8H_9Br, gives a Pale yellow precipitate when warmed with alcoholic $AgNO_3$. Oxidation of (A) gives an acid (B), $C_8H_6O_4$. (B) easily forms anhydride on heating. Identify the compound (A).

(a) 

(b) 

(c) 

(d) 

48. Fluorobenzene (C_6H_5F) can be synthesized in the laboratory:

(a) by direct fluorination of benzene with F_2 gas.

(b) by reacting bromobenzene with NaF solution.

(c) by heating phenol with HF and KF.

(d) from aniline by diazotisation followed by heating the diazonium salt with HBF_4.

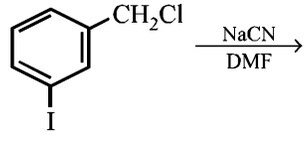
49. $PhCOCHBr_2 \xrightarrow{OH^-} A \xrightarrow{OH^-} B \xrightarrow{H^+} C$

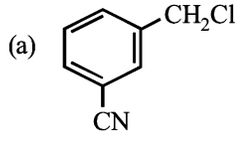
The compound C is –

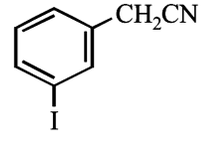
(a) PhCH(OH)CHO (b) PhCH(OH)COOH

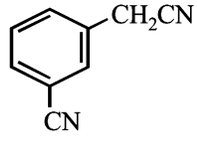
(c) $PhCOCBr_2$ (H) (d) $Ph-C(=O)-CH_2-OH$

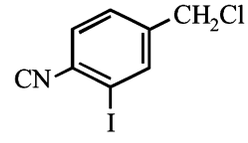
50. The structure of the major product formed in the following reaction is :



(a) 

(b) 

(c) 

(d) 

ANSWER KEY																			
Conceptual MCQs																			
1	(b)	**3**	(b)	**5**	(a)	**7**	(b)	**9**	(b)	**11**	(d)	**13**	(b)	**15**	(a)				
2	(a)	**4**	(d)	**6**	(b)	**8**	(b)	**10**	(d)	**12**	(d)	**14**	(c)						
Application Based MCQs																			
16	(d)	**19**	(b)	**22**	(b)	**25**	(b)	**28**	(d)	**31**	(b)	**34**	(a)	**37**	(b)	**40**	(a)		
17	(a)	**20**	(a)	**23**	(c)	**26**	(d)	**29**	(a)	**32**	(d)	**35**	(c)	**38**	(d)				
18	(b)	**21**	(c)	**24**	(b)	**27**	(c)	**30**	(a)	**33**	(d)	**36**	(a)	**39**	(d)				
Skill Based MCQs																			
41	(a)	**42**	(b)	**43**	(d)	**44**	(b)	**45**	(a)	**46**	(b)	**47**	(d)	**48**	(d)	**49**	(b)	**50**	(b)