

Ordinary Thinking

Objective Questions

Introduction of Halogen containing compounds

- How many structural isomers are possible for a compound with molecular formula C_3H_7Cl [MH CET 2001]
 - 2
 - 5
 - 7
 - 9
- In CH_3CH_2Br , % of Br is [DPMT 1996]
 - 80
 - 75
 - 70
 - 7
- Gem- dibromide is [RPMT 2000]
 - $CH_3CH(Br)OH(Br)CH_3$
 - $CH_3CBr_2CH_3$
 - $CH_2(Br)CH_2CH_2$
 - CH_2BrCH_2Br
- Ethylidene dibromide is
 - $CH_3 - CH_2 - Br$
 - $Br - CH_2 - CH_2 - Br$
 - $CH_3 - CHBr_2$
 - $CH_2 = CBr_2$
- Benzylidene chloride is
 - $C_6H_5CH_2Cl$
 - $C_6H_5CHCl_2$
 - $C_6H_4ClCH_2Cl$
 - $C_6H_5CCl_3$
- Which of the following halide is 2°
 - Isopropyl chloride
 - Isobutyl chloride
 - n*-propyl chloride
 - n*-butyl chloride
- Haloforms are trihalogen derivatives of [CPMT 1985]
 - Ethane
 - Methane
 - Propane
 - Benzene
- Benzene hexachloride is
 - 1, 2, 3, 4, 5, 6-hexachlorocyclohexane
 - 1, 1, 1, 6, 6, 6-hexachlorocyclohexane
 - 1, 6-phenyl-1, 6-chlorohexane
 - 1, 1-phenyl-6, 6-chlorohexane
- Number of π -bonds present in B.H.C. (Benzene hexachloride) are [RPMT 1999]
 - 6
 - Zero
 - 3
 - 12
- The general formula for alkyl halides is
 - $C_nH_{2n+1}X$
 - $C_nH_{2n+2}X$
 - $C_nH_{n+1}X$
 - $C_nH_{2n}X$
- Which of the following is a primary halide [DCE 2004]
 - Isopropyl iodide
 - Secondary butyl iodide
 - Tertiary butyl bromide
 - Neo hexyl chloride
- Full name of DDT is [KCET 1993]
 - 1, 1, 1-trichloro-2, 2-bis(*p*-chlorophenyl) ethane
 - 1, 1-dichloro-2, 2-diphenyl trimethylethane
 - 1, 1-dichloro-2, 2-diphenyl trichloroethane
 - None of these

- The compound which contains all the four $1^\circ, 2^\circ, 3^\circ$ and 4° carbon atoms is [J & K 2005]
 - 2, 3-dimethyl pentane
 - 3-chloro-2, 3-dimethylpentane
 - 2, 3, 4-trimethylpentane
 - 3, 3-dimethylpentane

Preparation of Halogen containing compounds

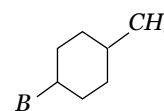
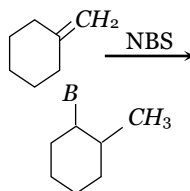
- The following reaction is known as

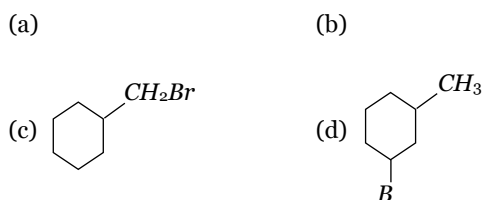
$$C_2H_5OH + SOCl_2 \xrightarrow{\text{Pyridine}} C_2H_5Cl + SO_2 + HCl$$
 [AIIMS 2002]
 - Kharasch effect
 - Darzen's procedure
 - Williamson's synthesis
 - Hunsdiecker synthesis reaction
- What is the main product of the reaction between 2-methyl propene with HBr [RPMT 2002]
 - 1-bromo butane
 - 1-bromo-2 methyl propane
 - 2-bromo butane
 - 2-bromo-2 methyl propane
- Halogenation of alkanes is [KCET 2002]
 - A reductive process
 - An oxidative process
 - An isothermal process
 - An endothermic process
- $$\begin{array}{c}
 \overset{+}{N} \equiv NBF_4 \\
 | \\
 \text{C}_6\text{H}_5
 \end{array}
 \xrightarrow{\Delta} A$$
 In the above process product A is [Kerala (Engg.) 2002]
 - Fluorobenzene
 - Benzene
 - 1, 4-difluorobenzene
 - 1, 3-difluorobenzene
- Silver acetate + $Br_2 \xrightarrow{CS_2} \cdot$. The main product of this reaction is [Kurukshetra CET 2002]
 - $CH_3 - Br$
 - CH_3COI
 - CH_3COOH
 - None of these
- Diazonium salts + $Cu_2Cl_2 + HCl \rightarrow$

$$\begin{array}{c}
 Cl \\
 | \\
 \text{C}_6\text{H}_5
 \end{array}$$
 , the reaction is known as [Kerala (Med.) 2002]
 - Chlorination
 - Sandmeyer's reaction
 - Perkin reaction
 - Substitution reaction
- When ethyl alcohol (C_2H_5OH) reacts with thionyl chloride, in the presence of pyridine, the product obtained is [AIIMS; CBSE PMT 2001]
 - $CH_3CH_2Cl + HCl$
 - $C_2H_5Cl + HCl + SO_2$
 - $CH_3CH_2Cl + H_2O + SO_2$
 - $CH_3CH_2Cl + HCl + SO_2$

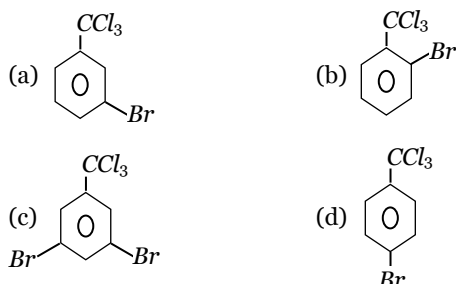
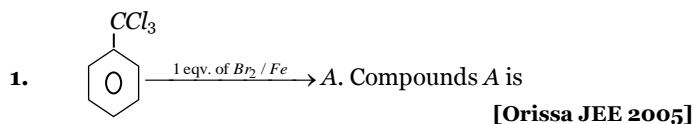
8. Preparation of alkyl halides in laboratory is least preferred by [DPMT 2000]
- Treatment of alcohols
 - Addition of hydrogen halides to alkenes
 - Halide exchange
 - Direct halogenation of alkanes
9. Which of the following organic compounds will give a mixture of 1-chlorobutane and 2-chlorobutane on chlorination [CPMT 2001]
- $$\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH} = \text{CH}_2 \\ | \\ \text{CH}_3 \end{array}$$
 - $$\begin{array}{c} \text{H} \\ | \\ \text{HC} \equiv \text{C} - \text{C} = \text{CH}_2 \end{array}$$
 - $\text{CH}_2 = \text{CH} - \text{CH} = \text{CH}_2$
 - $\text{CH}_2 = \text{CH} - \text{CH}_2 - \text{CH}_3$
10. The chlorobenzene is generally obtained from a corresponding diazonium salt by reacting it with [MP PMT 2000]
- Cu_2Cl_2
 - CuSO_4
 - Cu
 - $\text{Cu}(\text{NH}_3)_4^{2+}$
11. Decreasing order of reactivity of HX in the reaction $\text{ROH} + \text{HX} \rightarrow \text{RX} + \text{H}_2\text{O}$ [RPET 2000; AIIMS 1983; MP PET 1996]
- $\text{HI} > \text{HBr} > \text{HCl} > \text{HF}$
 - $\text{HBr} > \text{HCl} > \text{HI} > \text{HF}$
 - $\text{HCl} > \text{HBr} > \text{HI} > \text{HF}$
 - $\text{HF} > \text{HBr} > \text{HCl} > \text{HI}$
12. The product of the following reaction : [RPET 2000]
- $$\text{CH}_2 = \text{CH} - \text{CCl}_3 + \text{HBr}$$
- $\text{CH}_3 - \text{CH}(\text{Br}) - \text{CCl}_3$
 - $\text{CH}_2(\text{Br}) - \text{CH}_2 - \text{CCl}_3$
 - $\text{BrCH}_2 - \text{CHCl} - \text{CHCl}_2$
 - $\text{CH}_3 - \text{CH}_2 - \text{CCl}_3$
13. Chlorobenzene is prepared commercially by [JIPMER 2000; CPMT 1976; Pb. CET 2002]
- Raschig process
 - Wurtz Fitting reaction
 - Friedel-Craft's reaction
 - Grignard reaction
14. In methyl alcohol solution, bromine reacts with ethylene to yield $\text{BrCH}_2\text{CH}_2\text{OCH}_3$ in addition to 1, 2-dibromoethane because [Pb. PMT 1998]
- The ion formed initially may react with Br^- or CH_3OH
 - The methyl alcohol solvates the bromine
 - The reaction follows Markownikoff's rule
 - This is a free-radical mechanism
15. $\text{C}_3\text{H}_8 + \text{Cl}_2 \xrightarrow{\text{Light}} \text{C}_3\text{H}_7\text{Cl} + \text{HCl}$ is an example of which of the following types of reactions [AFMC 1997; CPMT 1999]
- Substitution
 - Elimination
 - Addition
 - Rearrangement
16. Which of the following would be produced when acetylene reacts with HCl [MH CET 1999]
- $\text{CH}_3\text{CH}_2\text{Cl}$
 - CH_3CHCl_2
 - $\text{CHCl} = \text{CHCl}$
 - $\text{CH}_2 = \text{CHCl}$
17. $\text{R} - \text{OH} + \text{HX} \rightarrow \text{R} - \text{X} + \text{H}_2\text{O}$
- In the above reaction, the reactivity of different alcohols is [CPMT 1997]
- Tertiary > Secondary > Primary
 - Tertiary < Secondary < Primary
 - Tertiary < Secondary > Primary
 - Secondary < Primary < Tertiary
18. $\text{C}_6\text{H}_6 + \text{Cl}_2 \xrightarrow{\text{UV Light}}$ Product. In above reaction product is [CPMT 1997]
- CCl_3CHO
 - $\text{C}_6\text{H}_6\text{Cl}_6$
 - $\text{C}_6\text{H}_{12}\text{Cl}_6$
 - $\text{C}_6\text{H}_9\text{Cl}_2$
19. Benzene reacts with chlorine to form benzene hexachloride in presence of [MP PET 1999]
- Nickel
 - AlCl_3
 - Bright sunlight
 - Zinc
20. The final product obtained by distilling ethyl alcohol with the excess of chlorine and $\text{Ca}(\text{OH})_2$ is [MP PET 1996]
- CH_3CHO
 - CCl_3CHO
 - CHCl_3
 - $(\text{CH}_3)_2\text{O}$
21. When ethyl alcohol and KI reacted in presence of Na_2CO_3 , yellow crystals of..... are formed [AFMC 1989]
- CHI_3
 - CH_3I
 - CH_2I_2
 - $\text{C}_2\text{H}_5\text{I}$
22. In preparation of CHCl_3 from ethanol and bleaching powder, the latter provides [BHU 1986]
- $\text{Ca}(\text{OH})_2$
 - Cl_2
 - Both (a) and (b)
 - None of these
23. Which one of the following processes does not occur during formation of CHCl_3 from $\text{C}_2\text{H}_5\text{OH}$ and bleaching powder [DPMT 1984]
- Hydrolysis
 - Oxidation
 - Reduction
 - Chlorination
24. Which of the following is obtained when chloral is boiled with NaOH [CBSE PMT 1991; RPMT 1999]
- CH_3Cl
 - CHCl_3
 - CCl_4
 - None of these
25. Chloroform can be obtained from [MNR 1986]
- Methanol
 - Methanal
 - Propanol-1
 - Propanol-2
26. Chlorine reacts with ethanol to give [MP PMT 1989; CPMT 1997; KCET 1998; JIPMER 1999]
- Ethyl chloride
 - Chloroform
 - Acetaldehyde
 - Chloral
27. On heating diethyl ether with conc. HI , 2 moles of which of the following is formed [IIT-JEE 1983; MP PET 1990; EAMCET 1990; AFMC 1993; JIPMER 2001]
- Ethanol
 - Iodoform
 - Ethyl iodide
 - Methyl iodide
28. Lucas reagent is [MP PMT 1996; MP PET 1992, 95; CPMT 1986, 89; AIIMS 1980; Kurukshetra CEE 2002]
- Concentrated HCl + anhydrous ZnCl_2
 - Dilute HCl + hydrated ZnCl_2
 - Concentrated HNO_3 + anhydrous ZnCl_2
 - Concentrated HCl + anhydrous MgCl_2
29. Which compound does not form iodoform with alkali and iodine [IIT-JEE 1985]

- (a) Acetone (b) Ethanol
(c) Diethyl ketone (d) Isopropyl alcohol
30. Which compound gives yellow ppt. with iodine and alkali [IIT-JEE 1984]
(a) 2-hydroxy propane (b) Acetophenone
(c) Methyl acetone (d) Acetamide
31. Acetone reacts with I_2 in presence of $NaOH$ to form [MP PMT 1992]
(a) C_2H_5I (b) $C_2H_4I_2$
(c) CHI_3 (d) CH_3I
32. Ethanol is converted into ethyl chloride by reacting with [MP PET 1991; MP PMT 1990; BHU 1997]
(a) Cl_2 (b) $SOCl_2$
(c) HCl (d) $NaCl$
33. C_6H_5Cl prepared by aniline with [IIT-JEE 1984]
(a) HCl
(b) Cu_2Cl_2
(c) Cl_2 in presence of anhydrous $AlCl_3$
(d) HNO_2 and then heated with Cu_2Cl_2
34. The starting substance for the preparation of CH_3I is [CPMT 1975]
(a) CH_3OH (b) C_2H_5OH
(c) CH_3CHO (d) $(CH_3)_2CO$
35. A Grignard's reagent may be made by reacting magnesium with [CPMT 1973, 83, 84]
(a) Methyl amine (b) Diethyl ether
(c) Ethyl iodide (d) Ethyl alcohol
36. Which of the following is responsible for iodoform reaction [CPMT 1980; RPMT 1997]
(a) Formalin (b) Methanol
(c) Acetic acid (d) Ethanol
37. When a solution of sodium chloride containing ethyl alcohol is electrolysed, it forms
(a) Ethyl alcohol (b) Chloral
(c) Chloroform (d) Acetaldehyde
38. Which reagent cannot be used to prepare an alkyl halide from an alcohol [CPMT 1989, 94]
(a) $HCl + ZnCl_2$ (b) $NaCl$
(c) PCl_5 (d) $SOCl_2$
39. Ethyl benzoate reacts with PCl_5 to give [KCET 2003]
(a) $C_2H_5Cl + C_6H_5COCl + POCl_3 + HCl$
(b) $C_2H_5Cl + C_6H_5COCl + POCl_3$
(c) $CH_3COCl + C_6H_5COCl + POCl_3$
(d) $C_2H_5Cl + C_6H_5COOH + POCl_3$
40. On treatment with chlorine in presence of sunlight, toluene gives the product [Orissa JEE 2003; MH CET 1999, 2002]
(a) *o*-chloro toluene (b) 2, 5-dichloro toluene
(c) *p*-chloro toluene (d) Benzyl chloride
41. When chlorine is passed through warm benzene in presence of the sunlight, the product obtained is [KCET 2003]
(a) Benzotrichloride (b) Chlorobenzene
(c) Gammexane (d) DDT
42. Which of the following acids adds to propene in the presence of peroxide to give anti-Markownikoff's product [MP PET 2003]
(a) HF (b) HCl
(c) HBr (d) HI
43. Propene on treatment with HBr gives [CPMT 1986]
(a) Isopropyl bromide (b) Propyl bromide
(c) 1, 2-dibromoethane (d) None of the above
44. The catalyst used in Raschig's process is
(a) $LiAlH_4$ (b) Copper chloride
(c) Sunlight (d) Ethanol/ Na
45. The compound formed on heating chlorobenzene with chloral in the presence of concentrated sulphuric acid, is [AIEEE 2004]
(a) Freon (b) DDT
(c) Gammexane (d) Hexachloroethane
46. Acetone is mixed with bleaching powder to give [AFMC 2004]
(a) Chloroform (b) Acetaldehyde
(c) Ethanol (d) Phosgene
47. Which of the following compounds gives trichloromethane on distilling with bleaching powder [KCET 2004; EAMCET 1986]
(a) Methanal (b) Phenol
(c) Ethanol (d) Methanol
48. The product formed on reaction of ethyl alcohol with bleaching powder is [Orissa JEE 2004; DPMT 1978; AIIMS 1991]
(a) $CHCl_3$ (b) CCl_3CHO
(c) CH_3COCH_3 (d) CH_3CHO
49. Ethylene reacts with bromine to form [Pb. CET 2000]
(a) Chloroethane (b) Ethylene dibromide
(c) Cyclohexane (d) 1-bromo propane
50. Best method of preparing alkyl chloride is [MH CET 2004]
(a) $ROH + SOCl_2 \longrightarrow$
(b) $ROH + PCl_5 \longrightarrow$
(c) $ROH + PCl_3 \longrightarrow$
(d) $ROH + HCl \xrightarrow{\text{anhy. } ZnCl_2}$
51. DDT is prepared by reacting chlorobenzene with [BHU 1998, 2005]
(a) CCl_4 (b) $CCl_3 - CHO$
(c) $CHCl_3$ (d) Ethane
52. Which compound needs chloral in its synthesis [Pb. PET 2003]
(a) *D. D. T.* (b) Gammexane
(c) Chloroform (d) Michler's Ketone
53. To get DDT, chlorobenzene has to react with which of the following compounds in the presence of concentrated sulphuric acid [KCET (Engg./Med.) 2001]
(a) Trichloroethane (b) Dichloroacetone
(c) Dichloroacetaldehyde (d) Trichloroacetaldehyde
54. What will be the product in the following reaction [BHU 2005]





Properties of Halogen containing compounds



2. Ethyl bromide can be converted into ethyl alcohol by
[KCET 1989]

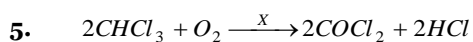
- (a) Heating with dilute hydrochloric acid and zinc
(b) Boiling with an alcoholic solution of KOH
(c) The action of moist silver oxide
(d) Refluxing methanol

3. Reaction of ethyl chloride with sodium leads to
[NCERT 1984]

- (a) Ethane (b) Propane
(c) n-butane (d) n-pentane

4. Treatment of ammonia with excess of ethyl chloride will yield
[AIIMS 1992]

- (a) Diethyl amine
(b) Ethane
(c) Tetraethyl ammonium chloride
(d) Methyl amine



In the above reaction, X stands for

- (a) An oxidant (b) A reductant
(c) Light and air (d) None of these

6. Phosgene is the common name for
[DPMT 1983; CPMT 1993; MP PMT 1994;
Kurukshetra CEE 1998; RPMT 2000, 02]

- (a) CO_2 and PH_3 (b) Phosphoryl chloride
(c) Carbonyl chloride (d) Carbon tetrachloride

7. When chloroform is treated with amine and KOH, we get
[CPMT 1979]

- (a) Rose odour smell
(b) Sour almond like smell
(c) Offensive odour
(d) Sour oil of winter green like smell

8. A mixture of two organic chlorine compounds was treated with sodium metal in ether solution. Isobutane was obtained as a product. The two chlorine compounds are [KCET 1989]

- (a) Methyl chloride and propyl chloride
(b) Methyl chloride and ethyl chloride
(c) Isopropyl chloride and methyl chloride
(d) Isopropyl chloride and ethyl chloride

9. Alkyl halides can be converted into Grignard reagents by
[KCET 1989]

- (a) Boiling them with Mg ribbon in alcoholic solution
(b) Warming them with magnesium powder in dry ether
(c) Refluxing them with $MgCl_2$ solution
(d) Warming them with $MgCl_2$

10. Which is not present in Grignard reagent
[CBSE PMT 1991]

- (a) Methyl group (b) Magnesium
(c) Halogen (d) $-COOH$ group

11. The reactivity of ethyl chloride is [KCET 1986]

- (a) More or less equal to that of benzyl chloride
(b) More than that of benzyl chloride
(c) More or less equal to that of chlorobenzene
(d) Less than that of chlorobenzene

12. The reactivity of halogen atom is minimum in [KCET 1985]

- (a) Propyl chloride (b) Propyl iodide
(c) Isopropyl chloride (d) Isopropyl bromide

13. Chlorobenzene is

- (a) Less reactive than benzyl chloride
(b) More reactive than ethyl bromide
(c) Nearly as reactive as methyl chloride
(d) More reactive than isopropyl chloride

14. The reactivities of methyl chloride, propyl chloride and chlorobenzene are in the order [KCET 1988]

- (a) Methyl chloride > propyl chloride > chlorobenzene
(b) Propyl chloride > methyl chloride > chlorobenzene
(c) Methyl chloride > chlorobenzene > propyl chloride
(d) Chlorobenzene > propyl chloride > methyl chloride

15. Which of the following compound will make precipitate most readily with $AgNO_3$
[CPMT 1985]

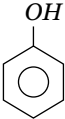
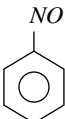
- (a) CCl_3CHO (b) $CHCl_3$
(c) $C_6H_5CH_2Cl$ (d) CHI_3

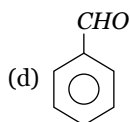
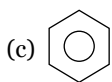
16. Carbylamine is liberated when..... is heated with chloroform and alcoholic potash [KCET 1992]

- (a) An aldehyde (b) A primary amine
(c) A secondary amine (d) A phenol

17. Salicylic acid can be prepared using Reimer-Tiemann's reaction by treating phenol with [KCET 1989]

- (a) Methyl chloride in the presence of anhydrous aluminium chloride
(b) Carbon dioxide under pressure in sodium hydroxide solution
(c) Carbon tetrachloride and concentrated sodium hydroxide
(d) Sodium nitrite and a few drops of concentrated sulphuric acid

18. Grignard reagent is prepared by the reaction between
[CBSE PMT 1994; DPMT 1996; Pb. PMT 1999; MH CET 1999]
- (a) Zinc and alkyl halide
(b) Magnesium and alkyl halide
(c) Magnesium and alkane
(d) Magnesium and aromatic hydrocarbon
19. Reaction of *t*-butyl bromide with sodium methoxide produces
[CBSE PMT 1994]
- (a) Isobutane (b) Isobutylene
(c) Sodium *t*-butoxide (d) *t*-butyl methyl ether
20. War gas is formed from
[BHU 1995]
- (a) PH_3 (b) C_2H_2
(c) Zinc phosphate (d) Chloropicrin
21. What happens when CCl_4 is treated with $AgNO_3$
[EAMCET 1987; CBSE PMT 1988; MP PET 2000]
- (a) NO_2 will be evolved
(b) A white ppt. of $AgCl$ will be formed
(c) CCl_4 will dissolve in $AgNO_3$
(d) Nothing will happen
22. If we use pyrene (CCl_4) in the Riemer-Tiemann reaction in place of chloroform, the product formed is
[CBSE PMT 1989; MP PMT 1990; MH CET 1999]
- (a) Salicylaldehyde (b) Phenolphthalein
(c) Salicylic acid (d) Cyclohexanol
23. $C_6H_5CH_2Cl + KCN(aq.) \rightarrow X + Y$
Compounds X and Y are
[BHU 1979]
- (a) $C_6H_6 + KCl$ (b) $C_6H_5CH_2CN + KCl$
(c) $C_6H_5CH_3 + KCl$ (d) None of these
24. The bad smelling substance formed by the action of alcoholic caustic potash on chloroform and aniline is
[MP PMT 1971, 92, 2001; CPMT 1971, 86; AFMC 2002; RPMT 1999]
- (a) Phenyl isocyanide (b) Nitrobenzene
(c) Phenyl cyanide (d) Phenyl isocyanate
25. Ethylidene chloride on treatment with aqueous KOH gives
[MP PMT 1986]
- (a) Ethylene glycol (b) Acetaldehyde
(c) Formaldehyde (d) None
26. Reaction
 $C_2H_5I + C_5H_{11}I + 2Na \rightarrow C_2H_5 - C_5H_{11} + 2NaI$ is called
[MP PMT 1992]
- (a) Hoffmann's reaction
(b) Dow's reaction
(c) Wurtz's reaction
(d) Riemer-Tiemann's reaction
27. In presence of $AlCl_3$, benzene and *n*-propyl bromide react in Friedal-Craft's reaction to form
[MP PMT 1991]
- (a) *n*-propyl benzene
(b) 1, 2-dinormal propyl benzene
(c) 1, 4-dinormal propyl benzene
(d) Isopropyl benzene
28. The dehydrobromination of 2-bromobutane gives $CH_3CH = CHCH_3$. The product is
- (a) Hofmann product
(b) Saytzeff product
(c) Hoffmann-Saytzeff product
(d) Markownikoff product
29. Ethylene difluoride on hydrolysis gives
- (a) Glycol (b) Fluoroethanol
(c) Difluoroethanol (d) Freon
30. Benzyl chloride when oxidised by $pb(NO_3)_2$ gives
[MP PMT 1989]
- (a) Benzoic acid (b) Benzaldehyde
(c) Benzene (d) None
31. Which of the following statements about chloroform is false
[Manipal MEE 1995]
- (a) It is a colourless, sweet-smelling liquid
(b) It is almost insoluble in water
(c) It is highly inflammable
(d) It can be used as an inhalational anaesthetic agent
32. CCl_4 cannot give precipitate with $AgNO_3$ due to
[CPMT 1979]
- (a) Formation of complex with $AgNO_3$
(b) Evolution of Cl_2 gas
(c) Chloride ion is not formed
(d) $AgNO_3$ does not give silver ion
33. On heating $CHCl_3$ with aq. $NaOH$, the product is
[CPMT 1971, 78; BHU 1997; EAMCET 1998; JIPMER (Med.) 2002]
- (a) CH_3COONa (b) $HCOONa$
(c) Sodium oxalate (d) CH_3OH
34. Ethyl bromide reacts with lead-sodium alloy to form
[MP PMT/PET 1988; MP PET 1997]
- (a) Tetraethyl lead (b) Tetraethyl bromide
(c) Both (a) and (b) (d) None of the above
35. Iodoform heated with Ag powder to form
[DPMT 1985]
- (a) Acetylene (b) Ethylene
(c) Methane (d) Ethane
36. Ethyl bromide reacts with silver nitrite to form
[DPMT 1985; IIT-JEE 1991]
- (a) Nitroethane
(b) Nitroethane and ethyl nitrite
(c) Ethyl nitrite
(d) Ethane
37. Which of the following reactions leads to the formation of chloritone
[RPMT 2003]
- (a) $CHCl_3 + CH_3COCH_3$ (b) $CCl_4 +$ Acetone
(c) $CHCl_3 + KOH$ (d) $CHCl_3 + HNO_3$
38. $CH_3 - CH_2 - CH_2Br + KOH$ (alc.) \rightarrow Product Product in above reaction is
[RPMT 2003]
- (a) $CH_3 - CH = CH_2$ (b) $CH_3 - CH_2 - CH_3$
(c) (a) and (b) both (d) None of these
39. $A + CCl_4 + KOH \rightarrow$ Salicylic acid
'A' in above reaction is
[RPMT 2003]
- (a)  (b) 



40. Identify X and Y in the following sequence
 $C_2H_5Br \xrightarrow{X} \text{product} \xrightarrow{Y} C_3H_7NH_2$
[Orissa JEE 2005]
- (a) $X = KCN, Y = LiAlH_4$
 (b) $X = KCN, Y = H_3O^+$
 (c) $X = CH_3Cl, Y = AlCl_3 / HCl$
 (d) $X = CH_3NH_2, Y = HNO_2$
41. 1-chlorobutane reacts with alcoholic KOH to form
[IIT-JEE 1991; AFMC 1998]
- (a) 1-butene (b) 2-butene
 (c) 1-butanol (d) 2-butanol
42. Which of the following reactions gives $H_2C = C = C = CH_2$
[Roorkee Qualifying 1998]
- (a) $CH_2Br - CBr = CH_2 \xrightarrow{Zn / CH_3OH}$
 (b) $HC \equiv C - CH_2 - COOH \xrightarrow[40^\circ C]{Aq. K_2CO_3}$
 (c) $CH_2Br - C \equiv C - CH_2Br \xrightarrow[Heat]{Zn}$
 (d) $2CH_2 = CH - CH_2I \longrightarrow$
43. When ethyl amine is heated with chloroform and alcoholic KOH , a compound with offensive smell is obtained. This compound is **[CPMT 1983, 84; RPMT 2002]**
- (a) A secondary amine (b) An isocyanide
 (c) A cyanide (d) An acid
44. Chlorobenzene on fusing with solid $NaOH$ gives
[DPMT 1981; CPMT 1990]
- (a) Benzene (b) Benzoic acid
 (c) Phenol (d) Benzene chloride
45. DDT can be prepared by reacting chlorobenzene (in the presence of conc. H_2SO_4) with
- (a) Cl_2 in ultraviolet light (b) Chloroform
 (c) Trichloroacetone (d) Chloral hydrate
46. When phenol reacts with $CHCl_3$ and KOH , the product obtained would be **[RPMT 1997]**
- (a) Salicylaldehyde (b) p -hydroxy benzaldehyde
 (c) Both (a) and (b) (d) Chloroform
47. Ethyl chloride on heating with silver cyanide forms a compound X . The functional isomer of X is
[EAMCET 1997; KCET 2005]
- (a) C_2H_5NC (b) C_2H_5CN
 (c) $H_3C - NH - CH_3$ (d) $C_2H_5NH_2$
48. Which of the following statements is incorrect **[CPMT 1977]**
- (a) C_2H_5Br reacts with alcoh. KOH to form C_2H_5OH
 (b) C_2H_5Br when treated with metallic sodium gives ethane
 (c) C_2H_5Br when treated with sodium ethoxide forms diethyl ether

(d) C_2H_5Br with $AgCN$ forms ethyl isocyanide

49. When chloroform is exposed to air and sunlight, it gives
[NCERT 1984; CPMT 1978, 87; CBSE PMT 1990; EAMCET 1993; MNR 1994; MP PET 1997, 2000; BHU 2001; AFMC 2002]
- (a) Carbon tetrachloride (b) Carbonyl chloride
 (c) Mustard gas (d) Lewisite
50. An organic halide is shaken with aqueous $NaOH$ followed by the addition of dil. HNO_3 and silver nitrate solution gave white ppt. The substance can be **[JIPMER 1997]**
- (a) $C_6H_4(CH_3)Br$ (b) $C_6H_5CH_2Cl$
 (c) C_6H_5Cl (d) None of these
51. A compound A has a molecular formula C_2Cl_3OH . It reduces Fehling solution and on oxidation gives a monocarboxylic acid (B). A is obtained by action of chlorine on ethyl alcohol. A is
[CBSE PMT 1994; MP PET 1997; KCET 2005]
- (a) Chloral (b) $CHCl_3$
 (c) CH_3Cl (d) Chloroacetic acid
52. Following equation illustrates
- $$C_6H_5Cl + 2NaOH \xrightarrow[200atm]{200-250^\circ C} C_6H_5OH + NaCl + H_2O$$
- [Bihar CEE 1995]**
- (a) Dow's process (b) Kolbe's process
 (c) Carbylamine test (d) Haloform reaction
53. One of the following that cannot undergo dehydrohalogenation is **[J & K 2005]**
- (a) Iso-propyl bromide (b) Ethanol
 (c) Ethyl bromide (d) None of these
54. A compound X on reaction with chloroform and $NaOH$ gives a compound with a very unpleasant odour. X is
[MP PMT 1999]
- (a) $C_6H_5CONH_2$ (b) $C_6H_5NH_2$
 (c) $C_6H_5CH_2NHCH_3$ (d) $C_6H_5NHCH_3$
55.
 In the above reaction product is
- (a) $C_6H_5OC_2H_5$ (b) $C_2H_5OC_2H_5$
 (c) $C_6H_5OC_6H_5$ (d) C_6H_5I
56. $C_2H_5Cl + KCN \longrightarrow X \xrightarrow{\text{Hydrolysis}} Y$. 'X' and 'Y' are
[MP PET 1995]
- (a) C_2H_6 and C_2H_5CN
 (b) C_2H_5CN and C_2H_6
 (c) C_2H_5CN and $C_2H_5CH_2NH_2$
 (d) C_2H_5CN and C_2H_5COOH
57. Iodoform is formed on warming I_2 and $NaOH$ with
[MP PET 1995; DCE 1999; RPET 1999; RPMT 2002]
- (a) C_2H_5OH (b) CH_3OH

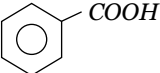
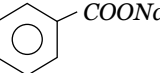
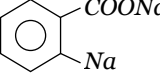
- (c) $HCOOH$ (d) C_6H_6
58. Which of the following reacts with phenol to give salicylaldehyde after hydrolysis [MP PMT 1995]
 (a) Dichloromethane (b) Trichloromethane
 (c) Methyl chloride (d) None of these
59. Dehydrohalogenation in monohaloalkanes produces
 (a) A single bond (b) A double bond
 (c) A triple bond (d) Fragmentation
60. When chloroform is treated with conc. HNO_3 it gives [CPMT 1986; MP PMT 1989; AFMC 1998, 99; EAMCET 1991; BHU 1999]
 (a) $CHCl_2NO_2$ (b) CCl_3NO_2
 (c) $CHCl_2HNO_3$ (d) None of these
61. A sample of chloroform being used as an anaesthetic is tested by [AIIMS 1980; CPMT 1983]
 (a) Fehling solution
 (b) Ammoniacal Cu_2Cl_2
 (c) $AgNO_3$ solution
 (d) $AgNO_3$ solution after boiling with alcoholic KOH solution
62. Dehydrohalogenation of an alkyl halide is [MP PMT 1996]
 (a) An addition reaction (b) A substitution reaction
 (c) An elimination reaction (d) An oxidation reaction
63. Reaction of aqueous sodium hydroxide on (i) ethyl bromide and (ii) chlorobenzene gives
 (a) (i) Ethene and (ii) *o*-chlorophenol
 (b) (i) Ethyl alcohol and (ii) *o*-chlorophenol
 (c) (i) Ethyl alcohol and (ii) phenol
 (d) (i) Ethyl alcohol and (ii) no reaction
64. 2-bromopentane is heated with potassium ethoxide in ethanol. The major product obtained is [CBSE PMT 1998]
 (a) Pentene-1 (b) *cis* pentene-2
 (c) *trans* pentene-2 (d) 2-ethoxypentane
65. What is the product formed in the following reaction

$$C_6H_5OH + CCl_4 \xrightarrow[(2) H^+]{(1) NaOH}$$
 [KCET 1998]
 (a) *p*-hydroxybenzoic acid (b) *o*-hydroxybenzoic acid
 (c) Benzaldehyde (d) Salicylaldehyde
66. When chloroform is treated with excess oxygen it forms [MH CET 1999]
 (a) $COCl_2 + HCl$
 (b) $COCl_2 + Cl_2 + H_2$
 (c) $COCl_2 + Cl_2 + H_2O$
 (d) No product will be formed
67. Which isomer of cyclohexane hexachloride is a very strong insecticide [MP PET 2003]
 (a) α (b) β
 (c) γ (d) δ
68. Haloalkane in the presence of alcoholic KOH undergoes [KCET (Engg./Med.) 2002]
 (a) Elimination (b) Polymerisation
 (c) Dimerisation (d) Substitution
69. The set of compounds in which the reactivity of halogen atom in the ascending order is [KCET (Engg.) 2002]
 (a) Vinyl chloride, chloroethane, chlorobenzene
 (b) Vinyl chloride, chlorobenzene, chloroethane
 (c) Chloroethane, chlorobenzene, vinyl chloride
 (d) Chlorobenzene, vinyl chloride, chloroethane
70. Alkyl halides react with Mg in dry ether to form [DPMT 2000; MP PET 2001]
 (a) Magnesium halide (b) Grignard's reagent
 (c) Alkene (d) Alkyne
71. In the following sequence of reactions

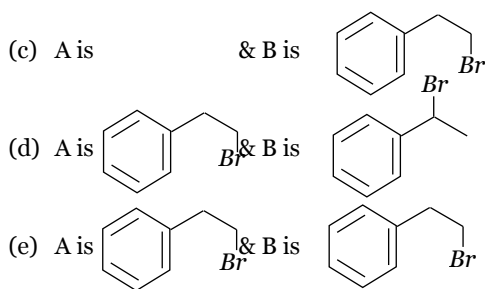
$$CH_3CH_2CH_2Br \xrightarrow{KOH(alc)} (A) \xrightarrow{HBr} (B) \xrightarrow{KOH(aq)} (C)$$

 The product (C) is [JIPMER 2001]
 (a) Propan-2-ol (b) Propan-1-ol
 (c) Propyne (d) Propene
72. Alkyl halide on heating with alc. NH_3 in a sealed tube results... [Orissa JEE 2002]
 (a) 1° amine (b) 2° amine
 (c) 3° amine (d) All of these
73. When $CH_3CH_2CHCl_2$ is treated with $NaNH_2$, the product formed is [CBSE PMT 2002]
 (a) $CH_3 - CH = CH_2$ (b) $CH_3 - C \equiv CH$
 (c) $CH_3CH_2CH(NH_2)(Cl)$ (d) $CH_3CH_2C(NH_2)_2$
74. By heating a mixture of $CHCl_3$ with silver powder, the compound formed is [Kurukshetra CET 2002]
 (a) Acetylene (b) Silver acetate
 (c) Methanol (d) None of these
75. Chloropicrin is [Kurukshetra CET 2002]
 (a) Trichloro acetaldehyde (b) Nitrochloroform
 (c) 2,4,6-trinitro phenol (d) None of these
76. Which of the following are correct statements about C_2H_5Br [Roorkee 1999]
 (a) It reacts with metallic Na to give ethane
 (b) It gives nitroethane on heating with aqueous ethanolic solution of $AgNO_2$
 (c) It gives C_2H_5OH on boiling with alcoholic potash
 (d) It forms ethylacetate on heating with silver acetate
77. Aryl halide is less reactive than alkyl halide towards nucleophilic substitution because [RPMT 2002]
 (a) Less stable carbonium ion
 (b) Due to large $C - Cl$ bond energy
 (c) Inductive effect
 (d) Resonance stabilization and sp^2 - hybridisation of C attached to halide
78. Methyl chloride reacts with silver acetate to yield [BVP 2003]
 (a) Acetaldehyde (b) Acetyl chloride
 (c) Methyl acetate (d) Acetic acid
79. Chloroform for anesthetic purposes is tested for its purity with the reagent [DPMT 2001]
 (a) Silver nitrate (b) Lead nitrate
 (c) Ammoniacal Cu_2Cl_2 (d) Lead nitrate
80. 2, 6 - Dimethylheptane on monochlorination produces..... derivatives [DPMT 2001]
 (a) 5 (b) 6
 (c) 3 (d) 4
81. The less reactivity of chlorine atom in $CH_2 = CH - Cl$ is due to [DCE 2001]
 (a) Inductive effect (b) Resonance stabilization
 (c) Electromeric effect (d) Electronegativity

82. $CH_3-CH_2-Br \xrightarrow{\text{alc.KCN}} CH_3CH_2CN \xrightarrow{\text{HOH}} X$
In this reaction, product X is [MH CET 2002]
(a) Acetic acid (b) Propionic acid
(c) Butyric acid (d) Formic acid
83. In alkaline hydrolysis of a tertiary alkyl halide by aqueous alkali if concentration of alkali is doubled, then the reaction [MH CET 2002]
(a) Will be doubled (b) Will be halved
(c) Will remain constant (d) Can't say
84. $AgNO_3$ does not give precipitate with $CHCl_3$ because [MP PET 1999; CPMT 2002]
(a) $CHCl_3$ does not ionise in water
(b) $AgNO_3$ does not reacts with $CHCl_3$
(c) $CHCl_3$ is chemically inert
(d) None of these
85. The reaction between chlorobenzene and chloral in the presence of concentrated sulphuric acid produces [Pb. PMT 2001]
(a) Gammexane
(b) *p,p*-dichloro diphenyl trichloro ethane
(c) Chloropicrin
(d) Benzene hexachloride
86. False statement is [RPET 1999]
(a) Chloroform is heavier than water
(b) CCl_4 is non-inflammable
(c) Vinyl chloride is more reactive than allyl chloride
(d) Br^- is a good nucleophile as compared to I^-
87. Chloroform is slowly oxidise by air in presence of light to form [MH CET 1999; UPSEAT 2001, 02; RPMT 2003]
(a) Formyl chloride (b) Phosgene
(c) Trichloroacetic acid (d) Formic acid
88. Alcoholic potash is used to bring about [KCET (Engg.) 2001]
(a) Dehydrogenation (b) Dehydration
(c) Dehydrohalogenation (d) Dehalogenation
89. Vinyl chloride reacts with HCl to form [JIPMER 2000]
(a) 1, 1- dichloro ethane
(b) 1, 2- dichloro ethane
(c) Tetrachloro ethylene
(d) Mixture of 1, 2 and 1, 1 – dichloro ethane
90. $R-X + NaOH \longrightarrow ROH + NaX$
The above reaction is classified as [BHU 1982; CBSE PMT 1991; RPET 2000]
(a) Nucleophilic substitution
(b) Electrophilic substitution
(c) Reduction
(d) Oxidation
91. Reduction of acetyl chloride with H_2 in presence of Pd gives [MP PMT 2001]
(a) CH_3COCH_3 (b) C_2H_5OH
(c) CH_3COOH (d) CH_3CHO
92. When methyl bromide is heated with Zn it gives [MP PMT 2001]
(a) CH_4 (b) C_2H_6
(c) C_2H_4 (d) CH_3OH
93. Phenol reacts with $CHCl_3$ and $NaOH$ (at 340K) to give [MP PMT 1997; CBSE PMT 2002]
(a) *o*-chlorophenol (b) Salicylaldehyde
(c) Benzaldehyde (d) Chlorobenzene
94. Iodoform on heating with KOH gives [MP PMT 2000]
(a) CH_3CHO (b) CH_3COOK
(c) $HCOOK$ (d) $HCHO$
95. Which reaction is correct in the conversion of chloroform to acetylene [Pb. PMT 2000]
(a) $CHCl_3 + AgNO_3$ (b) $CHCl_3 + O_2$
(c) $CHCl_3 + HNO_3$ (d) $CHCl_3 + Ag$
96. Which of the following gases are poisonous [Pb. PMT 2000]
(a) $CHCl_3$ (b) CO_2
(c) None of these (d) CO
97. Which of the following alkyl halide is used as a methylating agent [KCET (Med.) 2000; MP PET 1999]
(a) CH_3I (b) C_2H_5Br
(c) C_2H_5Cl (d) C_6H_5Cl
98. $C_6H_6Cl_6$, on treatment with alcoholic KOH , yields [AFMC 2000]
(a) C_6H_6 (b) $C_6H_3Cl_3$
(c) $(C_6H_6)OH$ (d) $C_6H_6Cl_4$
99. When ethyl iodide is heated with silver nitrate, the product obtained is [CPMT 2000]
(a) C_2H_5Ag (b) $Ag-O-NO_2$
(c) $C_2H_5O-NO_2$ (d) $C_2H_5I-NO_2$
100. $CHCl_3$ and HF lead to the formation of a compound of fluorine of molecular weight 70. The compound is [RPET 2000]
(a) Fluoroform (b) Fluorine monoxide
(c) Fluorine dioxide (d) Fluoromethanol
101. Chloroform with zinc dust in water gives [UPSEAT 2000]
(a) CH_4 (b) Chloropicrin
(c) CCl_4 (d) CH_2Cl_2
102. Which of the following is used as a catalyst for preparing Grignard reagent [KCET 1998]
(a) Iron powder (b) Iodine powder
(c) Activated charcoal (d) Manganese dioxide
103. For a given alkyl group the densities of the halides follow the order [MP PMT 1997]
(a) $RI < RBr < RCl$ (b) $RI < RCl < RBr$
(c) $RBr < RI < RCl$ (d) $RCl < RBr < RI$
104. Which halide will be least reactive in respect to hydrolysis [MP PET 2003]
(a) Vinyl chloride (b) Allyl chloride
(c) Ethyl chloride (d) *t*-Butyl chloride
105. In nucleophilic aliphatic substitution, the nucleophiles are generally
(a) Acids (b) Bases
(c) Salts (d) Neutral molecules
106. Which one of the following compounds does not react with bromine [DPMT 1983]

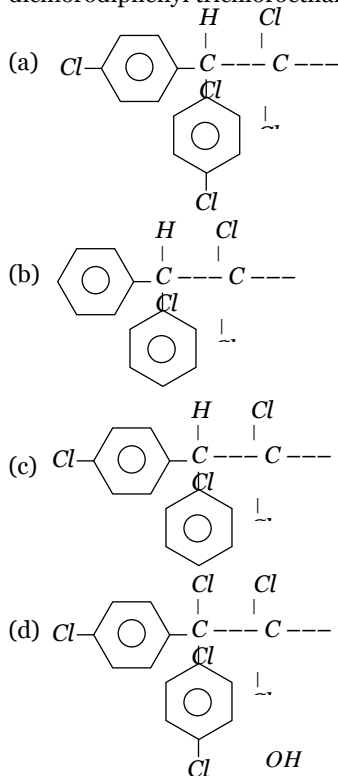
- (a) Ethylamine (b) Propene
(c) Phenol (d) Chloroform
- 107.** Allyl chloride on dehydro chlorination gives
[Kerala (Med.) 2003]
(a) Propadiene (b) Propylene
(c) Acetylchloride (d) Acetone
- 108.** Toluene reacts with excess of Cl_2 in presence of sunlight to give a product which on hydrolysis followed by reaction with $NaOH$ gives
[Orissa JEE 2004]
- (a)  (b) 
(c)  (d) None of these
- 109.** An alkyl bromide produces a single alkene when it reacts with sodium ethoxide and ethanol. This alkene undergoes hydrogenation and produces 2-methyl butane. What is the identity of the alkyl bromide
[Kerala PMT 2004]
(a) 1-bromo-2, 2-dimethylpropane
(b) 1-bromobutane
(c) 1-bromo-2-methylbutane
(d) 2-bromo-2-methylbutane
(e) 2-bromopentane
- 110.** On treating a mixture of two alkyl halides with sodium metal in dry ether, 2-methyl propane was obtained. The alkyl halides are
[KCET 2004]
(a) 2-chloropropane and chloromethane
(b) 2-chloropropane and chloroethane
(c) Chloromethane and chloroethane
(d) Chloromethane and 1-chloropropane
- 111.** In which case formation of butane nitrile is possible
[Orissa JEE 2004]
(a) $C_3H_7Br + KCN$ (b) $C_4H_9Br + KCN$
(c) $C_3H_7OH + KCN$ (d) $C_4H_9OH + KCN$
- 112.** The reaction of an aromatic halogen compound with an alkyl halides in presence of sodium and ether is called
[MP PMT 2004]
(a) Wurtz reaction
(b) Sandmeyer's reaction
(c) Wurtz-fittig reaction
(d) Kolbe reaction
- 113.** The compound added to prevent chloroform to form phosgene gas is
[MP PET 2004]
(a) C_2H_5OH (b) CH_3COOH
(c) CH_3COCH_3 (d) CH_3OH
- 114.** Among the following, the one which reacts most readily with ethanol is
[AIIMS 2004]
(a) *p*-nitrobenzyl bromide
(b) *p*-chlorobenzyl bromide
(c) *p*-methoxybenzyl bromide
(d) *p*-methylbenzyl bromide
- 115.** Chloropicrin is obtained by the reaction of
[CBSE PMT 2004]
(a) Chlorine on picric acid
(b) Nitric acid on chloroform
(c) Steam on carbon tetrachloride
(d) Nitric acid on chlorobenzene
- 116.** In Wurtz reaction alkyl halide react with
[MH CET 2004]
(a) Sodium in ether (b) Sodium in dry ether
(c) Sodium only (d) Alkyl halide in ether
- 117.** Chloroform, when kept open, is oxidised to
[CPMT 2004]
(a) CO_2 (b) $COCl_2$
(c) CO_2, Cl_2 (d) None of these
- 118.** Chloroform reacts with concentrated HNO_3 to give
[Pb. CET 2000]
(a) Water gas (b) Tear gas
(c) Laughing gas (d) Producer gas
- 119.** When ethyl chloride and alcoholic KOH are heated, the compound obtained is
[MH CET 2003]
(a) C_2H_4 (b) C_2H_2
(c) C_6H_6 (d) C_2H_6
- 120.** Chloroform, on warming with Ag powder, gives
[MH CET 2003]
(a) C_2H_6 (b) C_3H_8
(c) C_2H_4 (d) C_2H_2
- 121.** When alkyl halide is heated with dry Ag_2O , it produces
[CPMT 1997; BHU 2004]
(a) Ester (b) Ether
(c) Ketone (d) Alcohol
- 122.** Reaction of alkyl halides with aromatic compounds in presence of anhydrous $AlCl_3$ is known as
[UPSEAT 2004]
(a) Friedal-Craft reaction
(b) Hofmann degradation
(c) Kolbe's synthesis
(d) Beckmann rearrangement
- 123.** Two percent of ethanol is added during the oxidation of chloroform to stop the formation of carbonyl chloride. In this reaction ethanol acts as
[Pb. CET 2001]
(a) Auto catalyst (b) Negative catalyst
(c) Positive catalyst (d) None of these
- 124.** When benzene is heated with chlorine in the presence of sunlight, it forms
[Pb. CET 2000]
(a) B.H.C. (b) Cyclopropane
(c) *p*-dichlorobenzene (d) None of these
- 125.** Ethylene di bromide on heating with metallic sodium in ether solution yields
[Pb. CET 2004]
(a) Ethene (b) Ethyne
(c) 2-butene (d) 1-butene
- 126.** The reaction, $CH_3Br + Na \rightarrow$ Product, is called
[Pb. CET 2003]
(a) Perkin reaction (b) Levit reaction
(c) Wurtz reaction (d) Aldol condensation
- 127.** At normal temperature iodoform is
[MP PET 2004]
(a) Thick viscous liquid (b) Gas
(c) Volatile liquid (d) Solid
- 128.** Which of the following statements about benzyl chloride is incorrect
[KCET 2004]
(a) It is less reactive than alkyl halides
(b) It can be oxidised to benzaldehyde by boiling with copper nitrate solution
(c) It is a lachrymatory liquid and answers Beilstein's test
(d) It gives a white precipitate with alcoholic silver nitrate





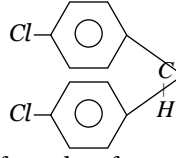
Uses of Halogen Containing Compounds

- Which of these can be used as moth repellent [CPMT 1987]
 - Benzene hexachloride
 - Benzal chloride
 - Hexachloroethane
 - Tetrachloroethane
- Which one of the following is the correct formula of dichlorodiphenyl trichloroethane [AIIMS 1982]



- The compound $(CH_3)_2C(OH)CCl_3$ is
 - Chloretone
 - Chloroquin
 - Chloropicrin
 - Chloropropyl chloride
- Depletion of ozone layer is caused by [RPMT 2002]
 - Freon
 - Alkane
 - Grignard reagent
 - All of these
- Which of the following is Teflon [RPMT 2002]
 - $[-CF_2 - CF_2 -]_n$
 - $CF_2 = CF_2$
 - $CF \equiv CF$
 - None of these
- Statement "Ozone in atmosphere is decreased by chloro-fluoro-carbon (Cl_2F_2C)" [RPET 1999]
 - Is true
 - Is false
 - Only in presence of CO_2
 - Only in absence of CO_2

- CF_xCl_y [where $x + y = 4$]. These compounds are not used because [RPET 2000]
 - These are fluoro carbons
 - These are difficult to synthesise
 - They deplete ozone layer
 - None of the these
- The molecular formula of DDT has [MP PMT 1997]
 - 5 chlorine atoms
 - 4 chlorine atoms
 - 3 chlorine atoms
 - 2 chlorine atoms
- What is the reagent used for testing fluoride ion in water [EAMCET 2003]
 - Alizarin - S
 - Quinalizarin
 - Phenolphthalein
 - Benzene
- Chloropicrin is used as [UPSEAT 2000]
 - Solvent
 - Anaesthetic
 - Perfume
 - Tear gas
- Which is used in the manufacture of plastic
 - $CH_2 = CHCl$
 - $CH \equiv CH$
 - $CH_2 = CH - CH_2I$
 - CCl_4
- Freon (dichlorodifluoro methane) is used [CPMT 1986; DPMT 1983; CBSE PMT 2001]
 - As local anaesthetic
 - For dissolving impurities in metallurgical process
 - In refrigerator
 - In printing industry
- Which of the following is known as freon which is used as a refrigerant [DPMT 1982; CPMT 1979, 81, 89; AFMC 1995; Manipal MEE 1995; MP PET 1995, 2004]
 - CCl_2F_2
 - $CHCl_3$
 - CH_2F_2
 - CF_4
- Benzene hexachloride (BHC) is used as [MP PMT 1994; KCET 1999]
 - Dye
 - Antimalarial drug
 - Antibiotic
 - Insecticide
- Which plastic is obtained from $CHCl_3$ as follows

$$CHCl_3 \xrightarrow[SbF_3]{HF} X \xrightarrow{800^\circ C} Y \xrightarrow{\text{Polymerisation}} \text{Plastic}$$
 - Bakelite
 - Teflon
 - Polythene
 - Perspex
-  . The above structural formula refers to [MP PET 1997]
 - BHC
 - DNA
 - DDT
 - RNA
- The commercial uses of DDT and benzene hexachloride are
 - DDT is a herbicide, benzene hexachloride is a fungicide
 - Both are insecticides
 - Both are herbicides
 - DDT is a fungicide and benzene hexachloride is a herbicide
- Which of the following is used in fire extinguishers [AFMC 1993]
 - CH_4
 - $CHCl_3$

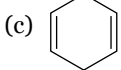
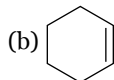
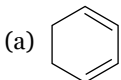
- (c) CH_2Cl_2 (d) CCl_4
19. Iodoform can be used as [NCERT 1981]
 (a) Anaesthetic (b) Antiseptic
 (c) Analgesic (d) Antifebrin
20. Which of the following is an anaesthetic [AFMC 1989]
 (a) C_2H_4 (b) $CHCl_3$
 (c) CH_3Cl (d) C_2H_5OH
21. An important insecticide is obtained by the action of chloral on chlorobenzene. It is [KCET 1989]
 (a) BHC (b) Gammexene
 (c) DDT (d) Lindane
22. In fire extinguisher, pyrene is [DPMT 1985]
 (a) CO_2 (b) CCl_4
 (c) CS_2 (d) $CHCl_3$
23. B.H.C. is used as [Pb. CET 2002]
 (a) Insecticide (b) Pesticide
 (c) Herbicide (d) Weedicide
24. The use of the product obtained as a result of reaction between acetone and chloroform is [RPMT 1999]
 (a) Hypnotic (b) Antiseptic
 (c) Germicidal (d) Anaesthetic
25. Use of chlorofluoro carbons is not encouraged because [KCET 2005]
 (a) They are harmful to the eyes of people that use it
 (b) They damage the refrigerators and air conditioners
 (c) They eat away the ozone in the atmosphere
 (d) They destroy the oxygen layer
- (b) NO_2 withdraws e^- from meta position
 (c) denotes e^- at meta position
 (d) NO_2 withdraws e^- from ortho/para positions
6. Among the following one with the highest percentage of chlorine is [MNR 1989; BHU 1998; MH CET 1999]
 (a) Chloral (b) Pyrene
 (c) PVC (d) Gammexene
7. In which alkyl halide, SN^2 mechanism is favoured maximum [RPMT 1997]
 (a) CH_3Cl (b) CH_3CH_2Cl
 (c) $(CH_3)_2CHCl$ (d) $(CH_3)_3C-Cl$
8. Which conformation of $C_6H_6Cl_6$ is most powerful insecticide
 (a) aaeeee (b) aaeeee
 (c) aaaaae (d) aaaaaa
9. The odd decomposition of carbon chlorine bond form [UPSEAT 1999]
 (a) Two free ions (b) Two-carbanium ion
 (c) Two carbanion (d) A cation and an anion
10. A new carbon-carbon bond formation is possible in [IIT-JEE 1998]
 (a) Cannizzaro reaction (b) Friedel-Craft's alkylation
 (c) Clemmensen reduction (d) Reimer-Tiemann reaction
11. An isomer of $C_3H_6Cl_2$ on boiling with aqueous KOH gives acetone. Hence, the isomer is [UPSEAT 2000]
 (a) 2, 2-dichloropropane (b) 1, 2-dichloropropane
 (c) 1, 1-dichloropropane (d) 1, 3-dichloropropane
12. Which of the following is the example of SN^2 reaction [CPMT 1999]
 (a) $CH_3Br + OH^- \longrightarrow CH_3OH + Br^-$
 (b) $CH_3CH(Br)CH_3 + OH^- \longrightarrow CH_3CH(OH)CH_3 + Br^-$
 (c) $CH_3CH_2OH \xrightarrow{-H_2O} CH_2=CH_2$
 (d) $CH_3-C(Br)(CH_3)-CH_3 + OH^- \longrightarrow CH_3-C(OH)(CH_3)-CH_3 + Br^-$

Critical Thinking

Objective Questions

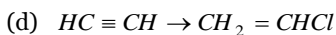
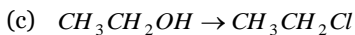
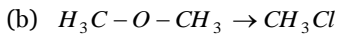
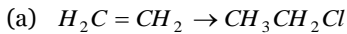
1. Among the following, the molecule with the highest dipole moment is [IIT-JEE (Screening) 2003]
 (a) CH_3Cl (b) CH_2Cl_2
 (c) $CHCl_3$ (d) CCl_4
2. When $CHCl_3$ is boiled with $NaOH$, It gives [Orissa JEE 2003]
 (a) Formic acid (b) Trihydroxy methane
 (c) Acetylene (d) Sodium formate
3. The hybridization state of carbon atoms in the product formed by the reaction of ethyl chloride with aqueous potassium hydroxide is [EAMCET 1997]
 (a) sp (b) sp^2
 (c) sp^3 (d) sp^3d
4. Which of the following compounds does not undergo nucleophilic substitution reactions [KCET 1998]
 (a) Vinyl chloride (b) Ethyl bromide
 (c) Benzyl chloride (d) Isopropyl chloride
5. Replacement of Cl of chlorobenzene to give phenol requires drastic conditions but chlorine of 2, 4-dinitrochlorobenzene is readily replaced because [CBSE PMT 1997]
 (a) NO_2 make ring electron rich at ortho and para
13. Wurtz reaction of methyl iodide yields an organic compound X. Which one of the following reactions also yields X [EAMCET 2003]
 (a) $C_2H_5Cl + Mg \xrightarrow{\text{dry ether}}$
 (b) $C_2H_5Cl + LiAlH_4 \longrightarrow$
 (c) $C_2H_5Cl + C_2H_5ONa \longrightarrow$
 (d) $CHCl_3 \xrightarrow[\Delta]{Ag \text{ powder}}$
14. Ethyl orthoformate is formed by heating with sodium ethoxide [EAMCET 2003]
 (a) $CHCl_3$ (b) C_2H_5OH
 (c) $HCOOH$ (d) CH_3CHO
15. 1, 2 di-bromo cyclohexane on dehydro halogenation gives

[UPSEAT 2003]



(d) None of these

16. In which one of the following conversions phosphorus pentachloride is used as a reagent [EAMCET 1997]



17. When but -3-en -2- ol reacts with aq. HBr, the product formed is [DCE 2001]

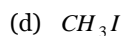
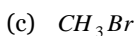
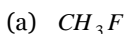
(a) 3 - bromobut - 1 - ene

(b) 1 - bromobut - 2 - ene

(c) A mixture of both a and b

(d) 2 - bromobut - 2 - ene

18. Which of these do not form Grignard reagent



19. An organic compound $A(C_4H_6Cl)$ on reaction with Na/diethyl ether gives a hydrocarbon, which on monochlorination gives only one chloro derivative. A is [Kerala PMT 2004]

(a) *t*-butyl chloride

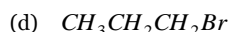
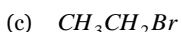
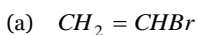
(b) *s*-butyl chloride

(c) Isobutyl chloride

(d) *n*-butyl chloride

(e) None of these

20. Among the following the most reactive towards alcoholic KOH is [AIIMS 2004]



21. Which one of the following possess highest m.pt. [Pb. CET 2004]

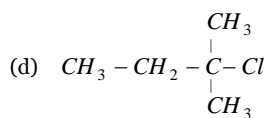
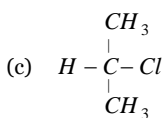
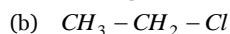
(a) Chlorobenzene

(b) *o*-dichlorobenzene

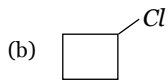
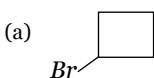
(c) *m*-dichlorobenzene

(d) *p*-dichlorobenzene

22. Which chlorine atom is more electronegative in the following [UPSEAT 2004]



23. What would be the product formed when 1-Bromo-3-chloro cyclobutane reacts with two equivalents of metallic sodium in ether [IIT-JEE (Screening) 2005]



Read the assertion and reason carefully to mark the correct option out of the options given below:

- (a) If both assertion and reason are true and the reason is the correct explanation of the assertion.
 (b) If both assertion and reason are true but reason is not the correct explanation of the assertion.
 (c) If assertion is true but reason is false.
 (d) If the assertion and reason both are false.
 (e) If assertion is false but reason is true.

- Assertion : $CHCl_3$ is stored in transparent bottles.
Reason : $CHCl_3$ is oxidised in dark. [AIIMS 1996]
- Assertion : Addition of bromine to trans-2-butene yields meso-2, 3-dibromobutane
Reason : Bromine addition to an alkene is an electrophilic addition. [IIT-JEE (Screening) 2001]
- Assertion : Alkyl halides are soluble in organic solvents.
Reason : *p*-dichlorobenzene possesses low melting point.
- Assertion : CCl_4 is not a fire extinguisher.
Reason : CCl_4 is insoluble in water.
- Assertion : Aqueous hydrohalogen acids are used to prepare alkyl halides from alkenes.
Reason : Hydrogen iodide readily reacts with alkenes to form alkyl halides.
- Assertion : Alkyl halides form alkenes when heated above $300^\circ C$.
Reason : CH_3CH_2I react slowly with strong base when compared to CD_3CH_2I .
- Assertion : Halogen acids react with alcohols to form haloalkanes.
Reason : Order of reactivity of halogen acids $HCl > HBr > HI$
- Assertion : is less reactive than towards reactions.
Reason : Tertiary alkyl halides react predominantly by S_N1 mechanism.
- Assertion : Electron withdrawing groups in aryl halides decrease the reactivity towards nucleophilic substitution.
Reason : 2, 4-Dinitrochlorobenzene is less reactive than chlorobenzene.
- Assertion : Aryl halides undergo electrophilic substitutions more readily than benzene.
Reason : Aryl halide gives a mixture of *o*- and *p*-products.
- Assertion : Addition of Br_2 to cis-but-2-ene is stereoselective.
Reason : S_N2 reactions are stereospecific as well as stereoselective.
- Assertion : Optically active 2-iodobutane on treatment with NaI in acetone undergoes racemization.

A **R** Assertion & Reason

For AIIMS Aspirants

Reason : Repeated Walden inversions on the reactant and its product eventually gives a racemic mixture.

13. Assertion : Nucleophilic substitution reaction on an optically active alkyl halide gives a mixture of enantiomers.

Reason : The reaction occurs by SN^1 mechanism.

Answers

81	b	82	b	83	c	84	a	85	b
86	cd	87	b	88	c	89	a	90	a
91	d	92	b	93	b	94	c	95	d
96	d	97	a	98	b	99	c	100	a
101	a	102	b	103	d	104	a	105	b
106	d	107	a	108	b	109	c	110	a
111	a	112	c	113	a	114	c	115	b
116	a	117	b	118	b	119	a	120	d
121	b	122	a	123	b	124	a	125	c
126	c	127	d	128	a	129	d	130	d
131	b	132	c	133	b	134	c	135	a
136	a	137	d	138	b	139	d	140	b
141	a	142	c	143	a	144	d	145	d
146	c								

Introduction of Halogen containing compounds

1	a	2	b	3	b	4	c	5	b
6	a	7	b	8	a	9	b	10	a
11	d	12	a	13	b				

Uses of Halogen containing compounds

1	c	2	a	3	a	4	a	5	a
6	a	7	c	8	a	9	a	10	d
11	a	12	c	13	a	14	d	15	b
16	c	17	b	18	d	19	b	20	b
21	c	22	b	23	a	24	a	25	c

Preparation of Halogen containing compounds

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

Properties of Halogen containing compounds

1	a	2	c	3	c	4	c	5	c
6	c	7	c	8	c	9	b	10	d
11	b	12	c	13	a	14	a	15	d
16	b	17	c	18	b	19	b	20	d
21	d	22	c	23	b	24	a	25	b
26	c	27	d	28	b	29	a	30	b
31	c	32	c	33	b	34	a	35	a
36	a	37	a	38	a	39	a	40	a
41	a	42	c	43	b	44	c	45	d
46	c	47	b	48	ab	49	b	50	b
51	a	52	a	53	b	54	b	55	a
56	d	57	a	58	b	59	b	60	b
61	c,d	62	c	63	c	64	c	65	b
66	c	67	c	68	a	69	d	70	b
71	a	72	d	73	d	74	a	75	b
76	b,d	77	d	78	c	79	a	80	d

Critical Thinking Questions

1	a	2	b	3	c	4	a	5	d
6	b	7	a	8	b	9	d	10	bd
11	a	12	a	13	b	14	a	15	d
16	bc	17	c	18	a	19	a	20	d
21	d	22	d	23	d				

Assertion and Reason

1	d	2	b	3	c	4	e	5	e
6	c	7	c	8	e	9	d	10	e
11	b	12	a	13	a				

AS Answers and Solutions

Introduction of Halogen containing compounds

2. (b) % of Br = $\frac{\text{Mass of Br}}{\text{Mass of organic compound}} \times 100$
 $= \frac{80}{109} \times 100 = 73.39\%$ or approx. 75%

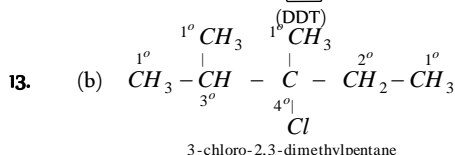
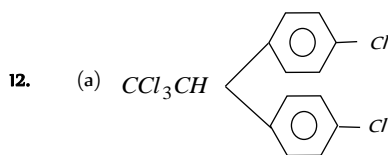
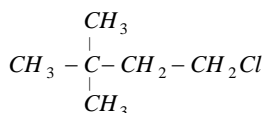
3. (b) Gem-dihalides are those in which two halogen atoms are attached on the same carbon atom.

6. (a) Isopropyl chloride $\text{CH}_3 - \overset{2^\circ}{\underset{\text{Cl}}{\text{C}}} - \text{CH}_3$ chlorine atom is

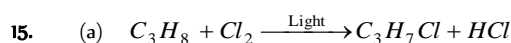
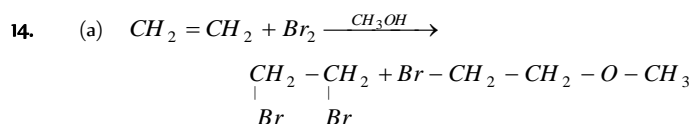
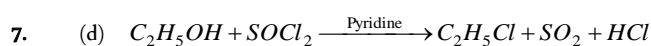
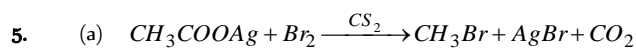
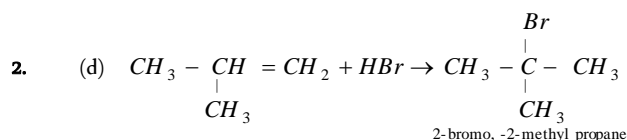
attached to 2° carbon atom.

7. (b) $\text{CH}_4 \xrightarrow[+3X]{-3H} \text{CHX}_3$ ($X = \text{Cl, Br, I}$)

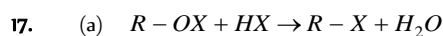
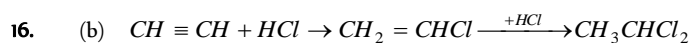
11. (d) Neohexyl chloride is a primary halide as in it Cl-atom is attached to a primary carbon.



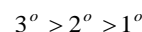
Preparation of Halogen containing compounds



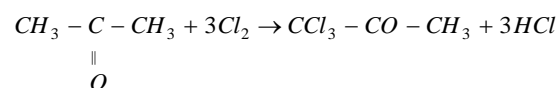
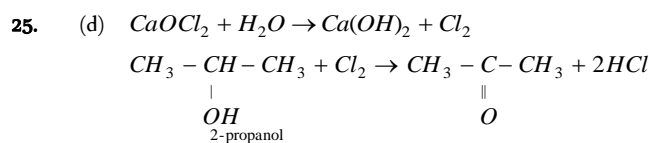
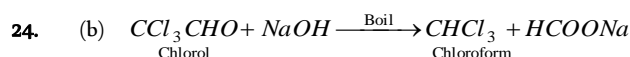
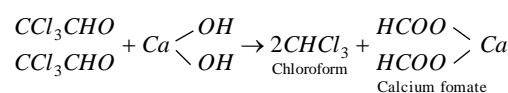
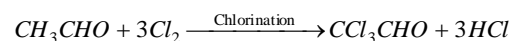
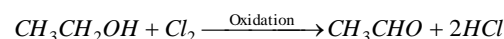
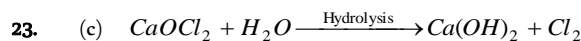
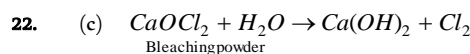
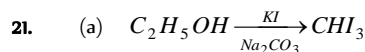
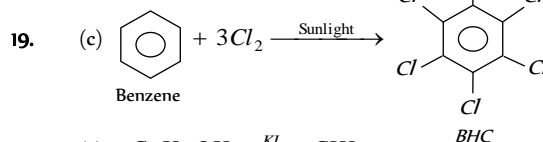
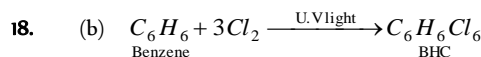
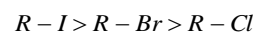
This is an example of substitution reaction. Hydrogen atom of alkane is replaced by halogen atom.

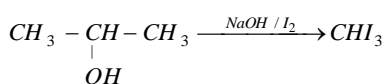
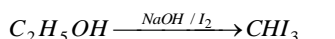
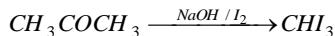
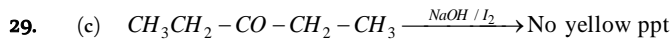
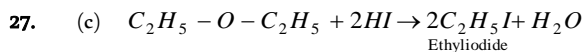
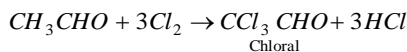
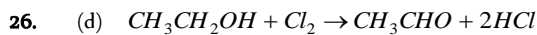
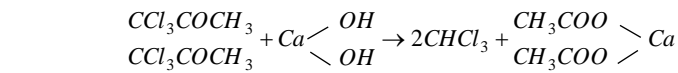


Reactivity order of alcohols for this reaction

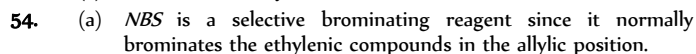
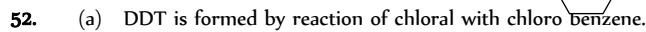
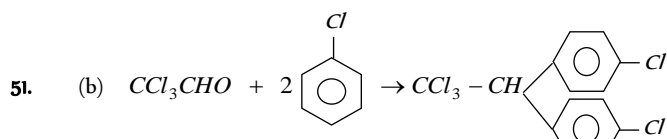
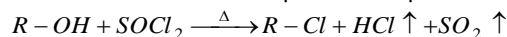
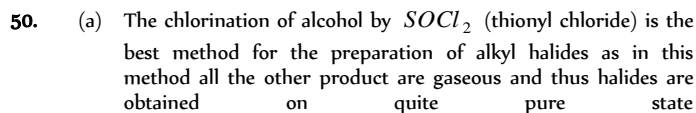
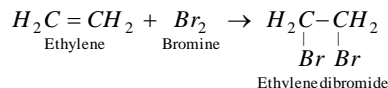
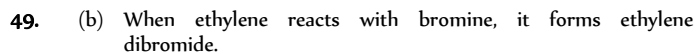
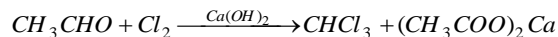
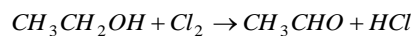
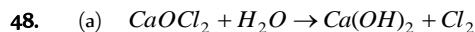
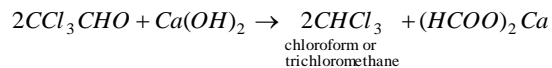
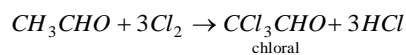
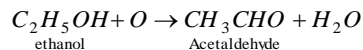
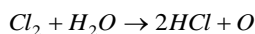
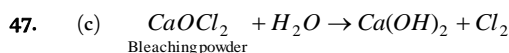
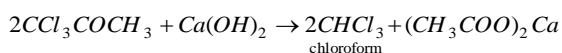
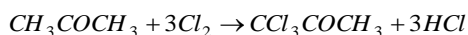
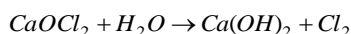
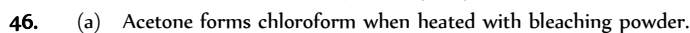
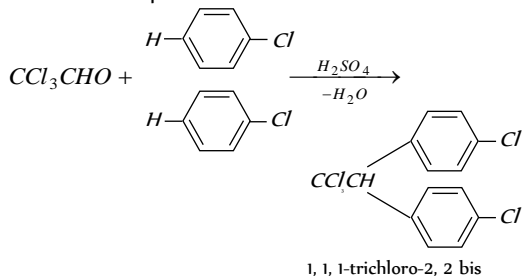
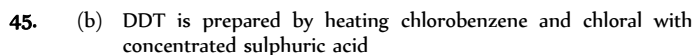
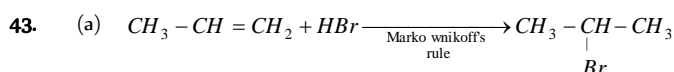
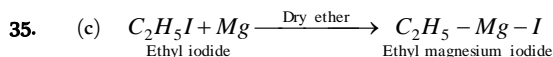
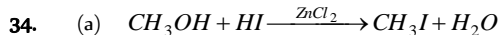
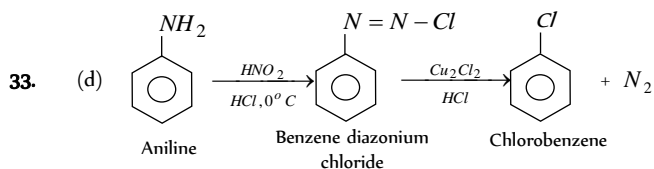
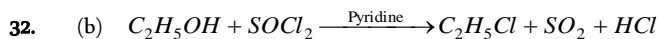
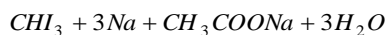
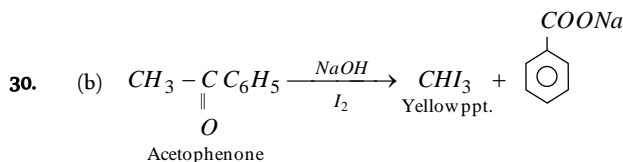


Reactivity order of halogen acids

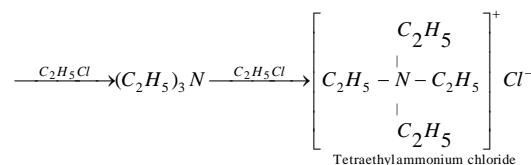
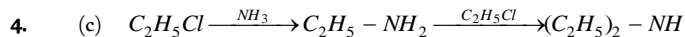
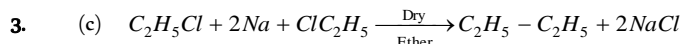
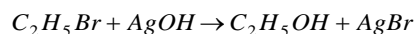
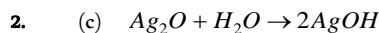
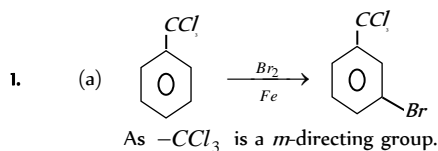




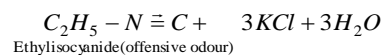
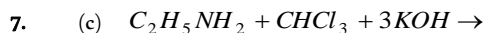
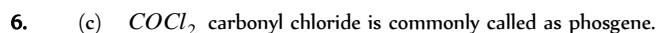
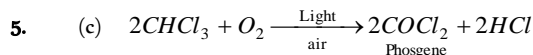
} yellow ppt.

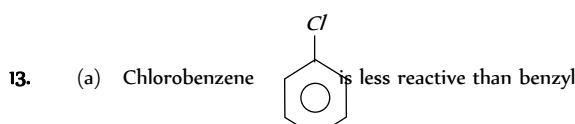
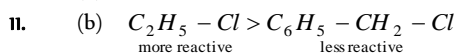
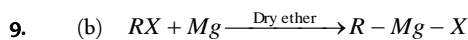
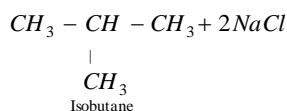
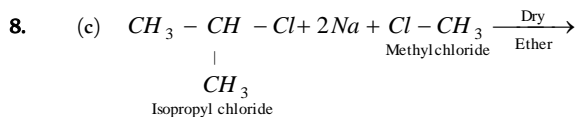


Properties of Halogen containing compounds

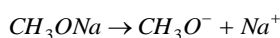
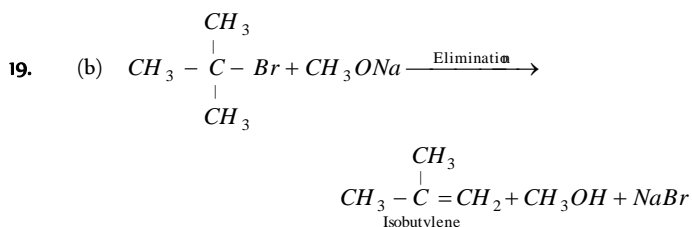
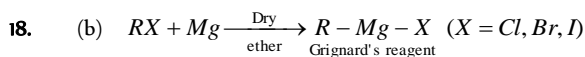
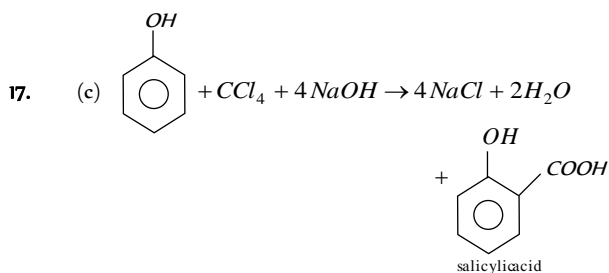
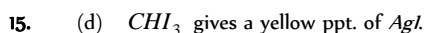
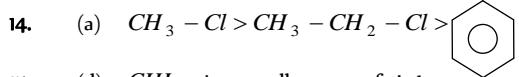
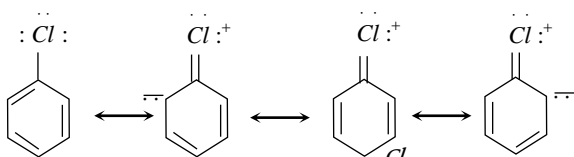


If NH_3 is in excess, then 1° amine will be the main product, if C_2H_5Cl is in excess then mixture of $1^\circ, 2^\circ, 3^\circ$ and quaternary amine is obtained.

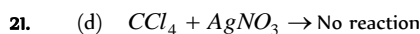
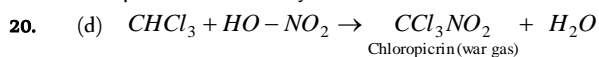




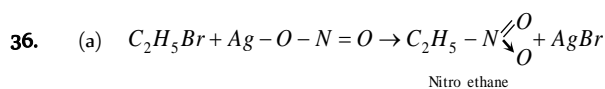
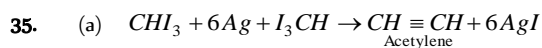
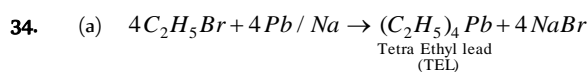
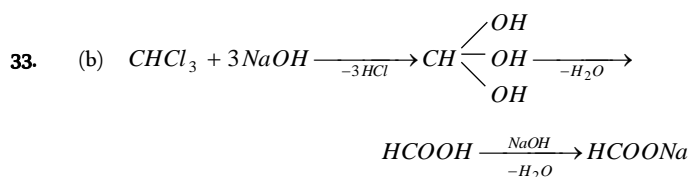
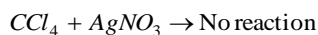
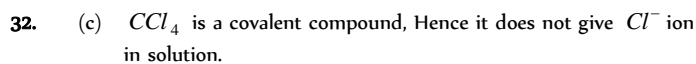
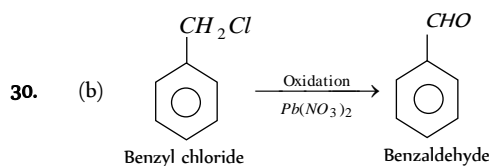
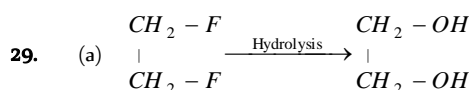
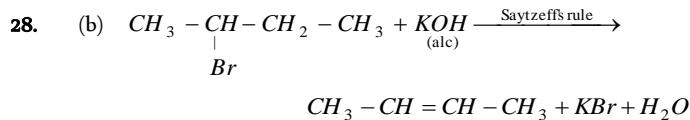
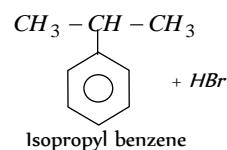
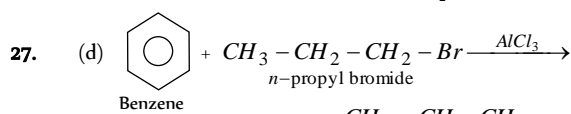
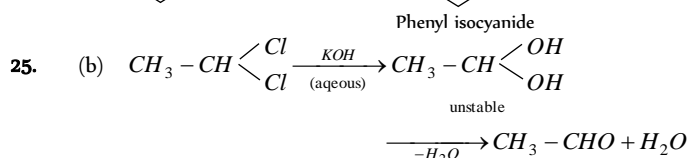
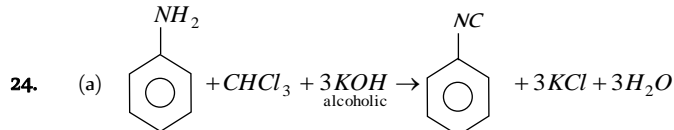
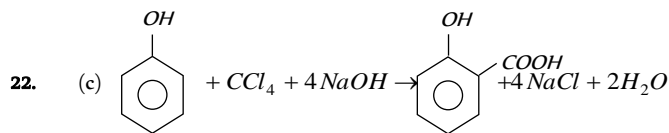
In chlorobenzene the lone pairs present on Cl atom get involved in resonance with π electrons of benzene due to which C-Cl bond acquires double bond character. Hence, reactivity decreases.



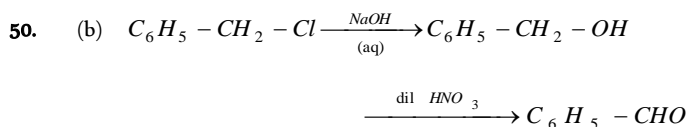
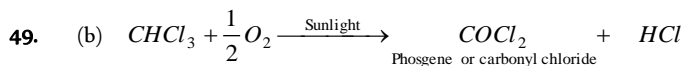
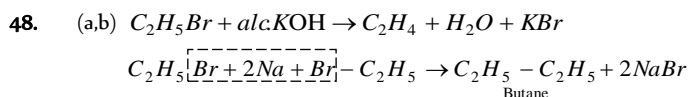
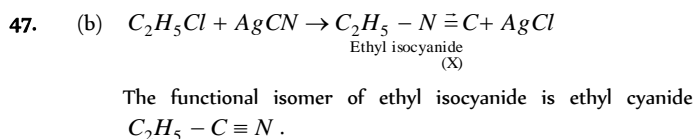
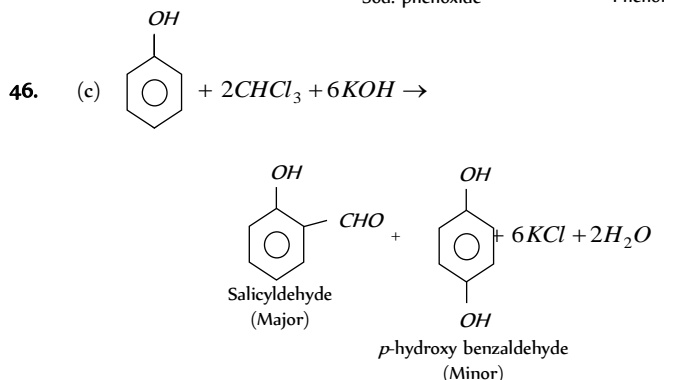
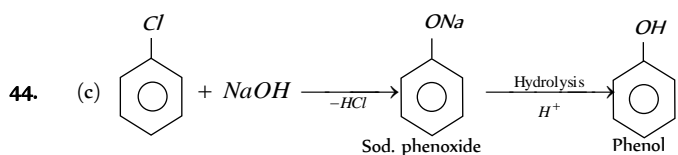
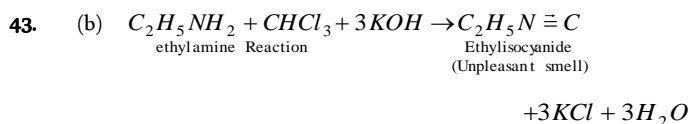
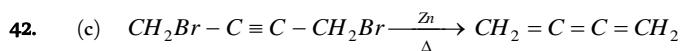
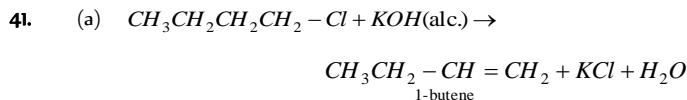
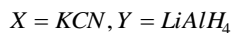
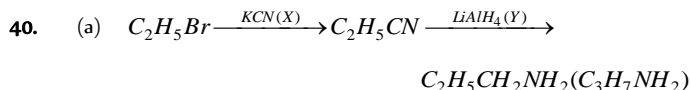
methoxide ion (CH_3O^-) is a strong base, therefore it abstracts proton from 3° alkyl halide and favours elimination reaction.



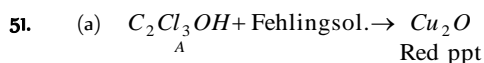
CCl_4 is a covalent compound. Therefore does not provide Cl^- ions.



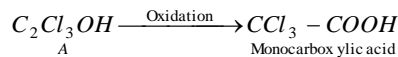
$Ag-O-N=O$ is a covalent compound. Therefore, attack of nucleophile occurs through Nitrogen atom. Hence, nitroethane is formed.



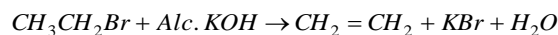
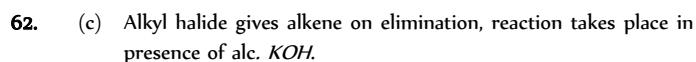
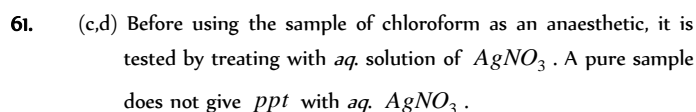
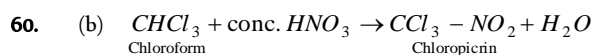
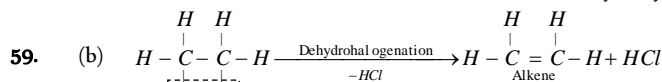
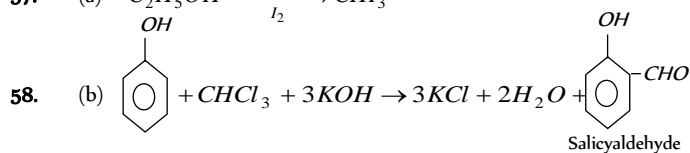
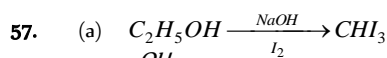
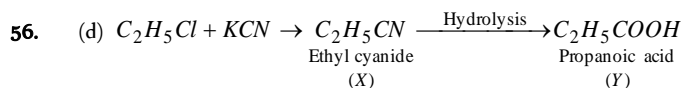
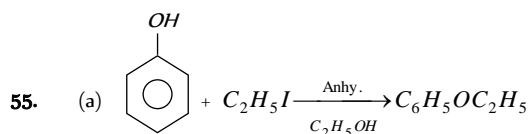
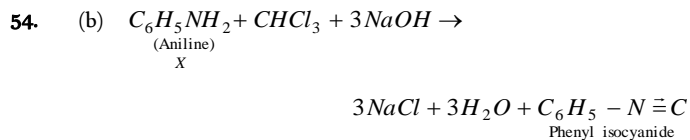
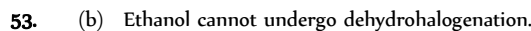
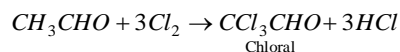
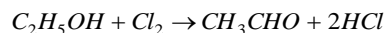
White ppt of $AgCl$ are obtained.



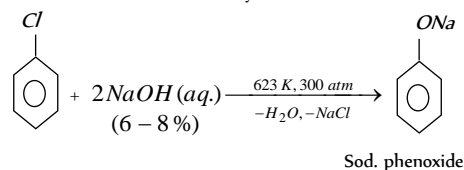
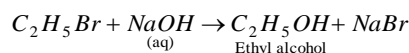
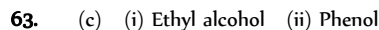
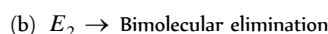
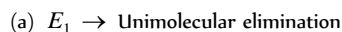
It means $-CHO$ group is present.



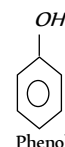
It means only one $-CHO$ group is present.



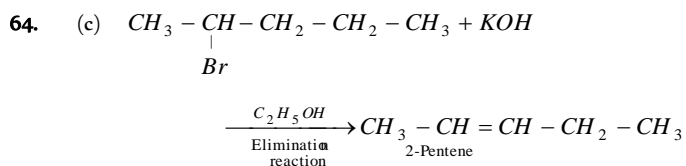
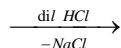
There are two types of elimination reactions.



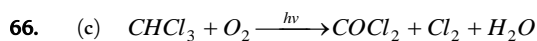
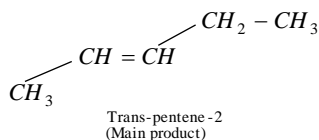
Sod. phenoxide



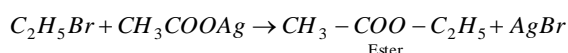
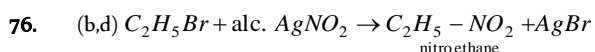
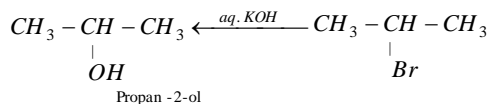
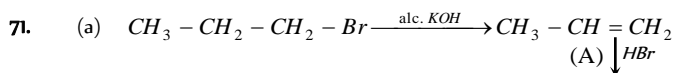
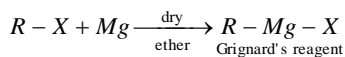
Phenol



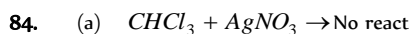
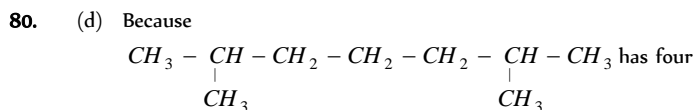
When alkyl halide reacts with alc. KOH then it favours elimination reaction (Dehydrohalogenation). Since, *trans* pentene-2 is more symmetrical than *cis* isomers. Hence, it is main product.



70. (b) Alkyl halide reacts with Mg in presence of dry ether to give alkyl magnesium halide which is also called as Grignard reagent. This reaction is also called as Grignard's reaction.



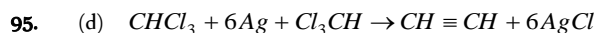
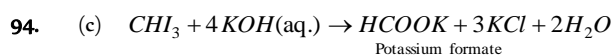
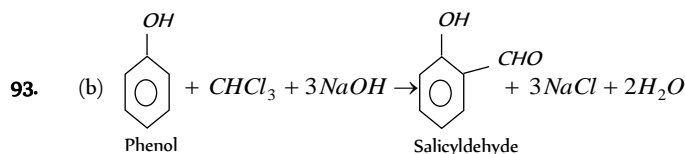
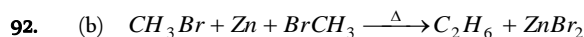
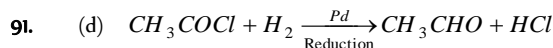
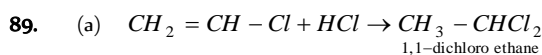
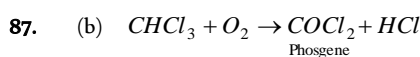
79. (a) If CHCl_3 sample contains phosgene (COCl_2) then it will give a white ppt. When treated with cold AgNO_3 .



CHCl_3 is a covalent compound. It does not ionize in water.

86. (c,d) Vinyl chloride is less reactive than allyl chloride due to resonance effect.

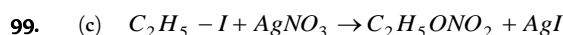
Order of nucleophilicity amongst the halide ion are as $\text{I}^- > \text{Br}^- > \text{Cl}^-$.



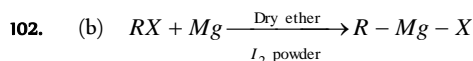
96. (d) CO is poisonous gas.



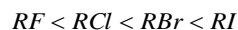
Thus Benzene hexahalides decomposes when heated with alc. KOH and yield trichloro benzene.



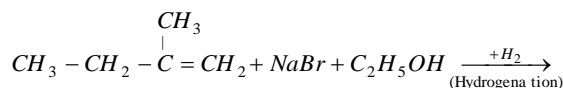
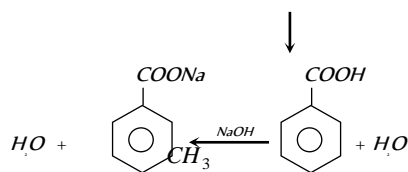
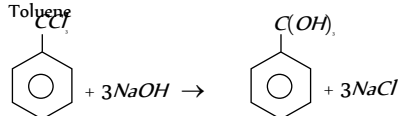
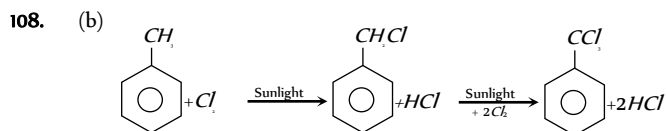
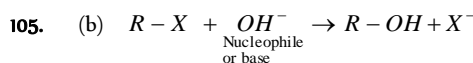
100. (a) We know that $\text{CHCl}_3 + \text{HF} \rightarrow \text{CHF}_3 + 3\text{HCl}$. Thus in this reaction the compound obtained in fluoroform (CHF_3). As we know molecular weight of $\text{CHF}_3 = 70$.



103. (d) Density of alkyl halide increases as the size of halogen atom increases.

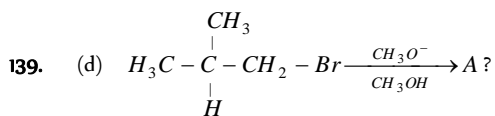
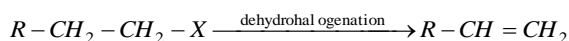


104. (a) Due to resonance partial double bond character is created on vinyl chloride. So, chlorine atom is not replaced easily.



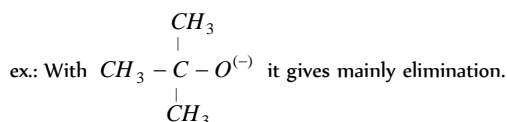


138. (b) Alkyl halide is best converted to alkene by mean of elimination reaction in form of dehydrohalogenation.

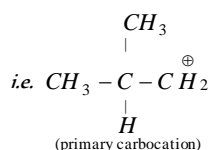


Alkyl halide is 1°.

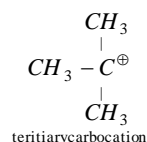
Keep in mind 1° halide give product by $S_N2 / E-2$ mechanism and 1° halide always gives substitution reaction except when strongly hindered base is used.



The reaction involves carbocation intermediate.



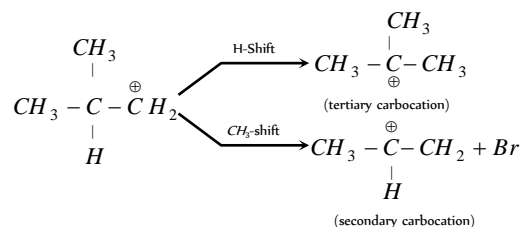
but as it is a primary carbocation it will rearrange to give a tertiary carbocation, which completes the reaction



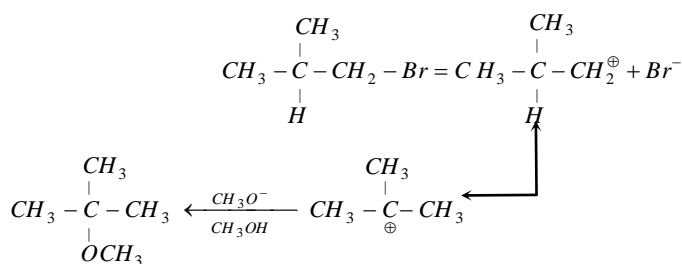
Stability of carbocation : $3^\circ > 2^\circ > 1^\circ > \overset{\oplus}{C}H_3$

It is because the stability of a charged system is increased by dispersal of the charge. The more stable the carbocation, the faster it is formed.

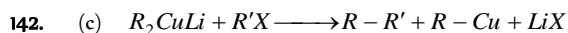
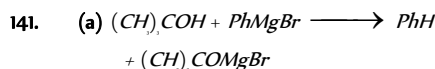
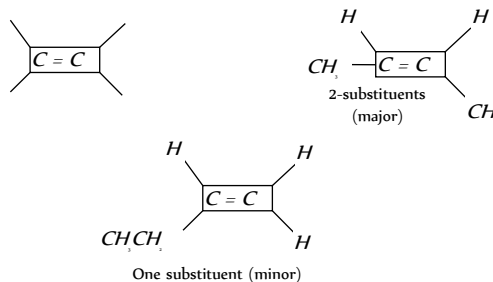
N.B. - Rearrangement can be done in two ways.



Therefore,



140. (b) According to Saytzeff's rule, the major product will be that one which contains more number of substituents around the double bond.

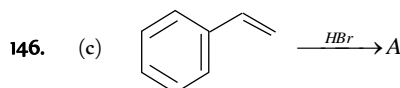
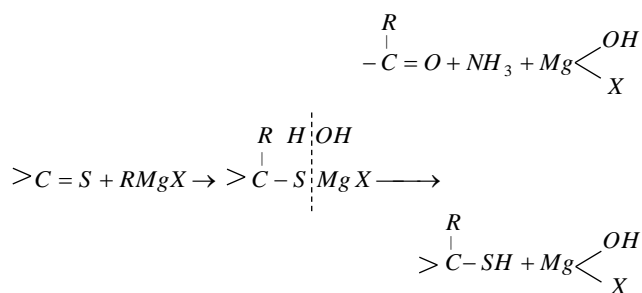
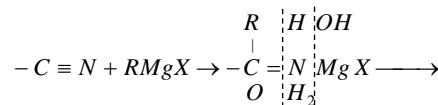
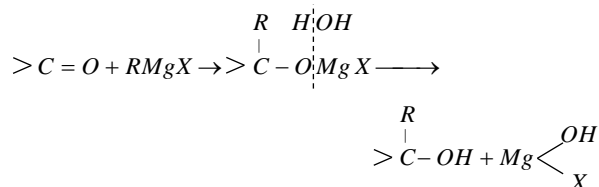


143. (a) CH_3F, CH_3Cl, CH_3Br and C_2H_5Cl are gases at room temperature. CH_3I is a liquid at room temperature and solidifies at $-66.5^\circ C$.

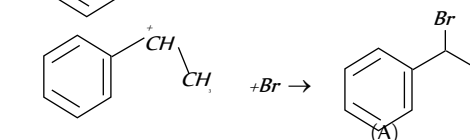
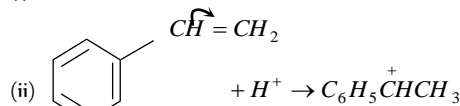
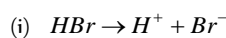
144. (d) The alkyl halides are highly reactive, the order of reactivity is iodide > bromide > chloride > (nature of the halogen atom). Tertiary > secondary > primary.

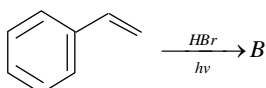
Thus 2-bromopropane is the given option.

145. (d) Grignard reagent gives addition reactions with compounds containing $C=O, -C \equiv N$ and $C=S$ group

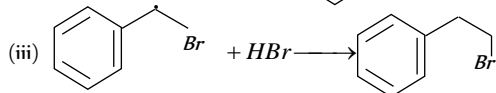
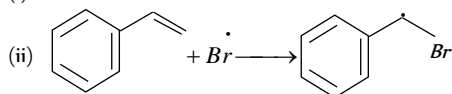
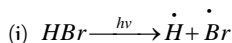


Formation of A is an electrophilic addition reaction

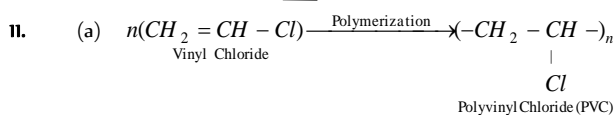
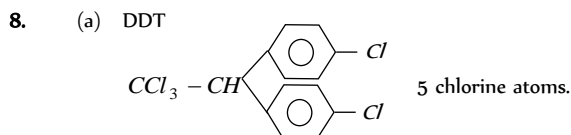
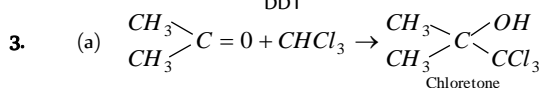
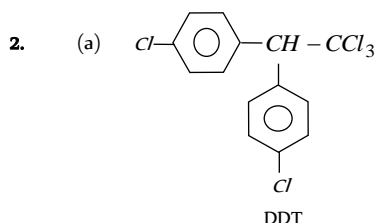




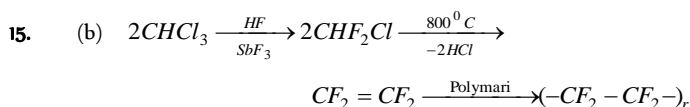
Formation of B is a free radical addition reaction



Uses of Halogen Containing Compounds



12. (c) Freon (CCl_2F_2) is an odourless, non-corrosive, non toxic gas which is stable even at high temperatures and pressures. It has low b.Pt, low specific heat and can be easily liquified by applying pressure at room temperature. It is therefore, widely used in refrigerant (cooling agent) in refrigerators and air conditioners.

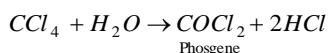


18. (d) Its vapours are non inflammable (*i.e.* do not catch fire). Hence used as fire extinguishers under the name pyren.

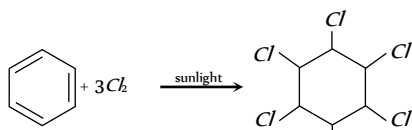
19. (b) Iodoform is used as an antiseptic for dressing wounds. When it comes in contact with skin (organic matter), Iodine is set free which responsible for antiseptic action.

20. (b) Inhalation of CHCl_3 vapours produces loss of consciousness and is therefore, used as a general anaesthetic agent in surgery.

22. (b) CCl_4 is stable to red heat. Its vapours are highly non-inflammable *i.e.* do not catch fire. It is because of this property CCl_4 is used as a fire extinguisher. But now a days its use as a fire extinguisher is restricted because with water vaporous. It forms highly poisonous phosgene gas



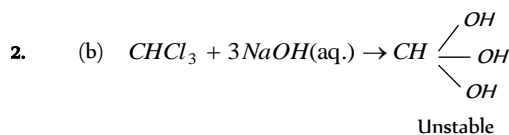
23. (a) Benzene hexachloride is an insecticide generally known as gammexane. It is obtained by the following reaction



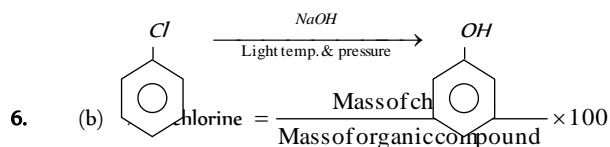
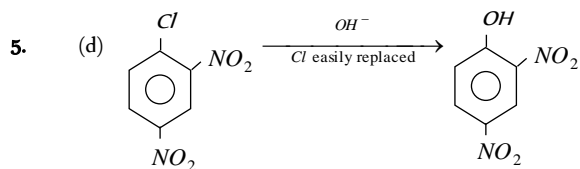
25. (c) Chlorofluorocarbon is used in air-conditioning and in domestic refrigerators for cooling purposes. Its main drawback is this, it is responsible for ozone depletion.

Critical Thinking Questions

1. (a) CH_3Cl have one Cl atom which is more electronegative so it will have highest dipole moment.



4. (a) As a result of resonance, the carbon-chloride bond acquires some double bond character. Hence, vinyl chloride does not undergo nucleophilic substitution reactions.



$$\text{Chloral } (\text{CCl}_3\text{CHO}) = \frac{106.5}{147.5} \times 100 = 72.20$$

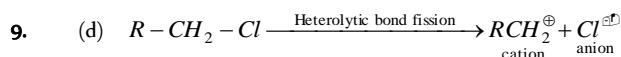
$$\text{Pyrene } (\text{CCl}_4) = \frac{142}{154} \times 100 = 92.20 \text{ Highest}$$

$$\text{Gammexene } (\text{C}_6\text{H}_6\text{Cl}_6) = \frac{213}{291} \times 100 = 73.19$$

7. (a) SN^2 Substitution nucleophilic bimolecular order of different alkyl halides. $1^\circ > 2^\circ > 3^\circ$

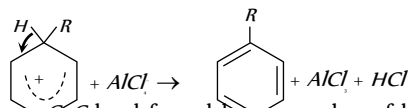
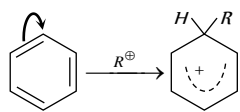
SN^1 Substitution nucleophilic unimolecular order of different alkyl halides, $3^\circ > 2^\circ > 1^\circ$.

8. (b) aaaaae form is the most powerful insecticide form of $\text{C}_6\text{H}_6\text{Cl}_6$.



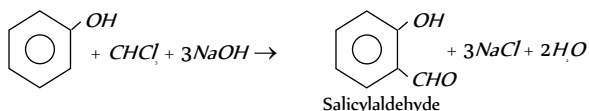
Cl is more electronegative than C by which it form anion and hydrocarbon form cation.

10. (b,d) New carbon-carbon bond formation take place in Friedel Craft's alkylation and Reimer-Tiemann reaction. In Friedel Craft's alkylation following mechanism involve

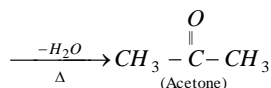
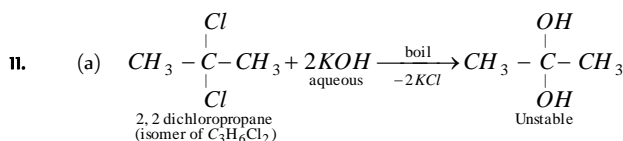


Here new $C-C$ bond formed between carbon of benzene ring and alkyl group.

Similarly in Reimer-Tiemann reaction.

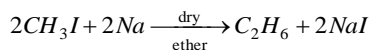


Here new $C-C$ bond formed between carbon of benzene ring and $-CHO$ group.

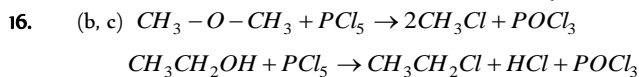
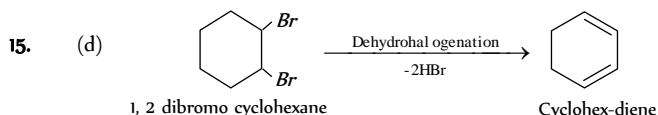
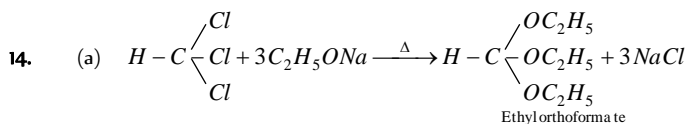
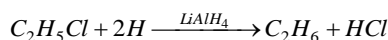


12. (a) Only 1° alkyl halides, i.e. CH_3Br undergoes S_N2 reaction.

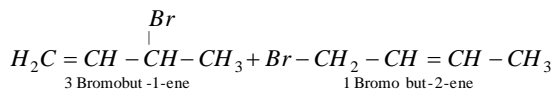
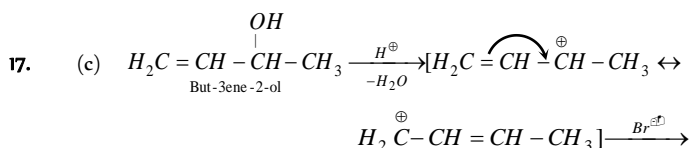
13. (b) Wurtz reaction gives ethane



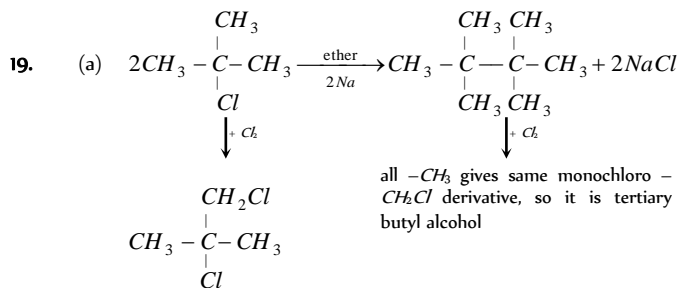
Similarly C_2H_5Cl reduced by $LiAlH_4$ to give ethane



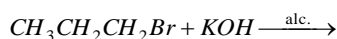
So, both reaction carried out by PCl_5



18. (a) The $C-F$ bond energy is maximum in CH_3F . Thus fluoride is the less reactive to form the grignard reagent with Mg .



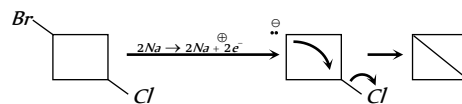
20. (d) The polarity between $C-X$ bond increase by increasing the $+I$ effect which increase by increasing the alkyl group by which X of $C-X$ easily eliminate. In $CH_3CH_2CH_2Br$ the polarity is maximum due to 3 alkyl group while in rest polarity decrease due to the presence of double bond, presence of $-CO$ group ($-I$) and less no. of alkyl group.



21. (d) p -dichlorobenzene molecule has symmetrical structure. It can fit well in its crystal lattice. The intermolecular forces of attraction are strong. Hence, it possesses highest melting point.

22. (d) Due to $+I$ effect of 3 alkyl group in option (d), the chlorine atom occupy the maximum charge in it so it is more electronegative.

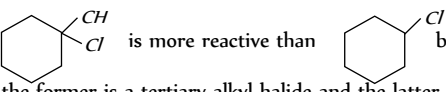
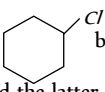
23. (d) It is the example of Wurtz reaction.

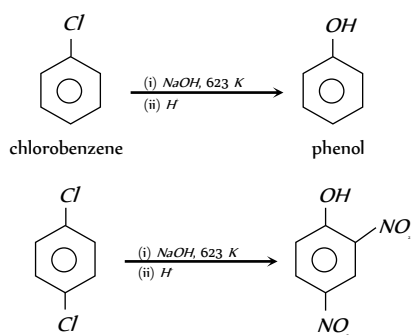


Assertion and Reason

1. (d) $CHCl_3$ is stored in dark bottles to prevent oxidation of $CHCl_3$ in presence of sunlight.
3. (c) Due to symmetrical nature and more closer packing p -dichlorobenzene has highest melting point.
4. (e) CCl_4 is used as a fire extinguisher. The dense, non combustible vapours cover the burning substance and prevents the availability of oxygen round burning material.
5. (e) Dry gaseous hydrohalogen acids are better electrophile. Also in aqueous solution, H_2O , acting as nucleophile may produce alcohol.
6. (c) CH_3CH_2I reacts more rapidly with strong base in comparison to CD_3CH_2I . The elimination of HI (or DI) in presence of strong base shows E_2 elimination. The rate determining step involves the breaking up of $C-H$ (or $C-D$) bond. The $C-D$ bond being stronger than $C-H$ and thus elimination is faster in case of CH_3CH_2I .
7. (c) For a given alcohol the order of reactivity of halogen acids follows the sequence $HI > HBr > HCl$. It is because of the fact

that I^- is a stronger nucleophile than Br^- which in turn is a stronger nucleophile than Cl^- .

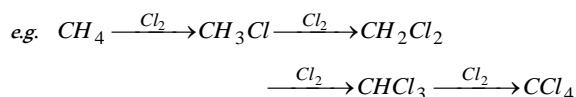
8. (e)  is more reactive than  because the former is a tertiary alkyl halide and the latter is a secondary alkyl halide. Tertiary alkyl halides react predominantly by S_N1 mechanism.
9. (d) Halobenzenes become reactive to nucleophilic substitution reactions when electron withdrawing groups (nitro, cyano) are present at ortho/para position. This is evident from the milder conditions required for hydrolysis in 2, 4-dinitrochlorobenzene than chlorobenzene.



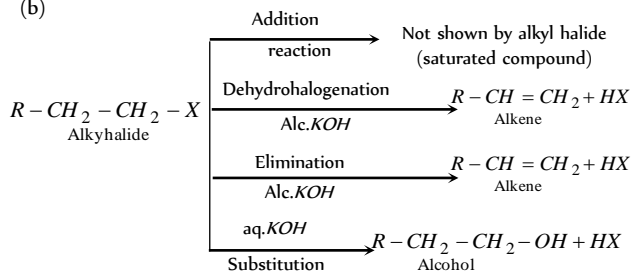
10. (e) Halogens are deactivating but ortho/para directing. As a result, aryl halides undergo the usual electrophilic substitution reactions less readily than benzene.
11. (b) A reaction is said to be stereo selective if a particular stereoisomer can give two or more stereoisomeric products but gives one of them in greater amount than the other or even to the exclusion of the other. So, addition of Br_2 to cis-but-2-ene is stereoselective since it gives only (\pm) 2, 3-dibromobutane.
13. (a) In S_N1 mechanism, racemization takes place, which is due to inverting nucleophilic displacement of halogen atom from the alkyl halide by the halide in solution.

- Preparation of alkyl halides in laboratory is least preferred by
 - Halide exchange
 - Direct halogenation of alkanes
 - Treatment of alcohols
 - Addition of hydrogen halides to alkenes
- An alkyl halide may be converted into an alcohol by
[EAMCET 1980; CBSE PMT 1997; BHU 1999; AIIMS 2001]
 - Addition
 - Substitution
 - Dehydrohalogenation
 - Elimination
- The $C-Cl$ bond in chlorobenzene as compared with $C-Cl$ bond in methyl chloride is
[MP PMT 1995]
 - Longer and weaker
 - Shorter and weaker
 - Shorter and stronger
 - Longer and stronger
- A salt solution is treated with chloroform drops. Then it is shaken with chlorine water. Chloroform layer becomes violet. Solution contains
[CPMT 1982]
 - NO_2^- ion
 - NO_3^- ion
 - Br^- ion
 - I^- ion
- The following reaction belongs to
 $(CH_3)_3C-Br \xrightarrow{H_2O} (CH_3)_3C-OH$ [AIEEE 2002]
 - Elimination reaction
 - Substitution reaction
 - Free radical reaction
 - Displacement reaction
- The order of reactivities of methyl halides in the formation of Grignard reagent is
[KCET 2003]
 - $CH_3I > CH_3Br > CH_3Cl$
 - $CH_3Cl > CH_3Br > CH_3I$
 - $CH_3Br > CH_3Cl > CH_3I$
 - $CH_3Br > CH_3I > CH_3Cl$
- Identify Z in the following series
 $C_2H_5I \xrightarrow{Alco. KOH} X \xrightarrow{Br_2} Y \xrightarrow{KCN} Z$
[AIIMS 1983; AFMC 1998; MP PET 1997]
 - CH_3CH_2CN
 - $\begin{array}{c} CH_2CN \\ | \\ CH_2CN \end{array}$
 - $BrCH_2-CH_2CN$
 - $BrCH=CHCN$
- The total number of stereoisomeric forms of $C_6H_6Cl_6$ known is
 - 6
 - 7
 - 8
 - None of these
- The correct order of $C-X$ bond polarity is [RPMT 2000]
 - $CH_3Br > CH_3Cl > CH_3I$
 - $CH_3I > CH_3Br > CH_3Cl$
 - $CH_3Cl > CH_3Br > CH_3I$
 - $CH_3Cl > CH_3I > CH_3Br$
- The order of reactivities of the following alkyl halides for a SN^2 reaction is [IIT-JEE (Screening) 2000]
 - $RF > RCl > RBr > RI$
 - $RF > RBr > RCl > RI$
 - $RCl > RBr > RF > RI$
 - $RI > RBr > RCl > RF$
- Which of the following reactions doesn't give benzene [RPMT 2003]
 - $C_6H_5N_2Cl \xrightarrow[H_2O]{boiling}$
 - $C_6H_5N_2Cl \xrightarrow[\Delta]{C_2H_5OH}$
 - $C_6H_5N_2Cl + H_3PO_2 + H_2O \longrightarrow$
 - All of these
- Benzene hexachloride is prepared from benzene and chlorine in sunlight by
 - Substitution reaction
 - Elimination reaction
 - Addition reaction
 - Rearrangement
- Carbon-halogen bond is strongest among the following [MP PMT 1995]
 - CH_3Cl
 - CH_3Br
 - CH_3F
 - CH_3I
- Which of these do not undergo Wurtz reaction
 - C_2H_5F
 - C_2H_5Br
 - C_2H_5Cl
 - C_2H_5I
- When ethyl bromide reacts with sodium acetylide the main product is [Pb. CET 2002]
 - 1-butane
 - 1-butene
 - 1-butyne
 - 2-butene
- C_2H_5I and Ag_2O reacts to produce [Pb. PMT 2004]
 - C_2H_6
 - $C_2H_5-C_2H_5$
 - $C_2H_5-O-C_2H_5$
 - $C_2H_5-CH_3$

1. (b) Direct halogenation of alkenes is not preferred because in it a mixture of monohalogen, dihalogen, trihalogen and tetrahalogen substituted product is obtained which is difficult to separate.



2. (b)



3. (c) In chlorobenzene C - Cl bond acquires partial double bond character because of resonance.

4. (d) $2NaI + Cl_2 \rightarrow 2NaCl + I_2$ (Dissolves in $CHCl_3$ to give violet colour)

Chlorine displaces iodine from salt. The iodine get dissolve in $CHCl_3$ or CCl_4 to produce violet colour.

5. (b) $(CH_3)_3C-Br \xrightarrow{H_2O} (CH_3)_3C-OH$

Here Br substitute by -OH group.

6. (a) Reactivity towards grignard reagent are as under $CH_3I > CH_3Br > CH_3Cl$

7. (b) $C_2H_5I \xrightarrow{\text{alc. KOH}} C_2H_4 \xrightarrow{Br_2} \begin{matrix} CH_2 & - & CH_2 \\ | & & | \\ Br & & Br \end{matrix}$
- $$\xrightarrow{KCN} \begin{matrix} CH_2 & - & CH_2 \\ | & & | \\ CN & & CN \end{matrix}$$
- Butene-1,4-dinitrile

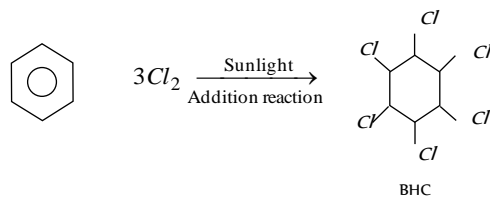
8. (c) $C_6H_6Cl_6$ has 8 stereoisomer.

9. (c) The C - X bond polarity order are as under $CH_3Cl > CH_3Br > CH_3I$

10. (d) The order of reactivity of alkyl halides for SN^2 reaction is $R-I > R-Br > R-Cl > R-F$

11. (a) $C_6H_5N_2Cl \xrightarrow[H_2O]{\text{Boiling}} C_6H_5OH + N_2 + HCl$

12. (c)



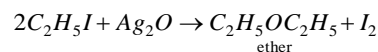
13. (c) $CH_3F > CH_3Cl > CH_3Br > CH_3I$

14. (a) $C_2H_5F + 2Na + FC_2H_5 \xrightarrow[\text{ether}]{\text{Dry}} \text{No reaction}$

15. (c) $C_2H_5Br + NaC \equiv CH \rightarrow C_2H_5C \equiv CH + NaBr$
Ethyl bromide sodium acetylide 1-butyne sodium bromide

Thus in this reaction 1-butyne is main product.

16. (c) C_2H_5I and Ag_2O reacts as below



Thus, $C_2H_5-O-C_2H_5$ is produced.

Ordinary Thinking

Objective Questions

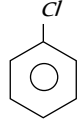
Introduction of Halogen containing compounds

- How many structural isomers are possible for a compound with molecular formula C_3H_7Cl [MH CET 2001]
 - 2
 - 5
 - 7
 - 9
- In CH_3CH_2Br , % of Br is [DPMT 1996]
 - 80
 - 75
 - 70
 - 7
- Gem- dibromide is [RPMT 2000]
 - $CH_3CH(Br)OH(Br)CH_3$
 - $CH_3CBr_2CH_3$
 - $CH_2(Br)CH_2CH_2$
 - CH_2BrCH_2Br
- Ethylidene dibromide is
 - $CH_3 - CH_2 - Br$
 - $Br - CH_2 - CH_2 - Br$
 - $CH_3 - CHBr_2$
 - $CH_2 = CBr_2$
- Benzylidene chloride is
 - $C_6H_5CH_2Cl$
 - $C_6H_5CHCl_2$
 - $C_6H_4ClCH_2Cl$
 - $C_6H_5CCl_3$
- Which of the following halide is 2°
 - Isopropyl chloride
 - Isobutyl chloride
 - n*-propyl chloride
 - n*-butyl chloride
- Haloforms are trihalogen derivatives of [CPMT 1985]
 - Ethane
 - Methane
 - Propane
 - Benzene
- Benzene hexachloride is
 - 1, 2, 3, 4, 5, 6-hexachlorocyclohexane
 - 1, 1, 1, 6, 6, 6-hexachlorocyclohexane
 - 1, 6-phenyl-1, 6-chlorohexane
 - 1, 1-phenyl-6, 6-chlorohexane
- Number of π -bonds present in B.H.C. (Benzene hexachloride) are [RPMT 1999]
 - 6
 - Zero
 - 3
 - 12
- The general formula for alkyl halides is
 - $C_nH_{2n+1}X$
 - $C_nH_{2n+2}X$
 - $C_nH_{n+1}X$
 - $C_nH_{2n}X$
- Which of the following is a primary halide [DCE 2004]
 - Isopropyl iodide
 - Secondary butyl iodide
 - Tertiary butyl bromide
 - Neo hexyl chloride
- Full name of DDT is [KCET 1993]
 - 1, 1, 1-trichloro-2, 2-bis(*p*-chlorophenyl) ethane
 - 1, 1-dichloro-2, 2-diphenyl trimethylethane
 - 1, 1-dichloro-2, 2-diphenyl trichloroethane
 - None of these
- The compound which contains all the four $1^\circ, 2^\circ, 3^\circ$ and 4° carbon atoms is [J & K 2005]
 - 2, 3-dimethyl pentane
 - 3-chloro-2, 3-dimethylpentane

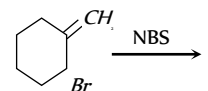
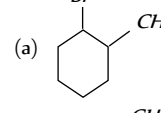
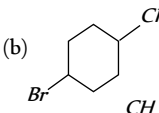
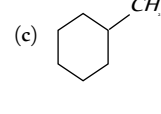
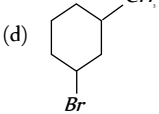
- 2, 3, 4-trimethylpentane
- 3, 3-dimethylpentane

Preparation of Halogen containing compounds

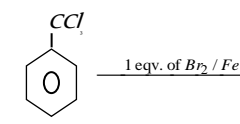
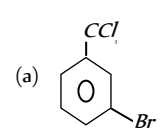
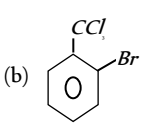
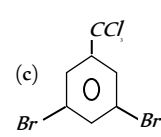
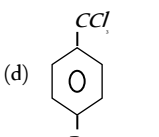
- The following reaction is known as

$$C_2H_5OH + SOCl_2 \xrightarrow{\text{Pyridine}} C_2H_5Cl + SO_2 + HCl$$
 [AIIMS 2002]
 - Kharasch effect
 - Darzen's procedure
 - Williamson's synthesis
 - Hunsdiecker synthesis reaction
- What is the main product of the reaction between 2-methyl propene with HBr [RPMT 2002]
 - 1-bromo butane
 - 1-bromo-2 methyl propane
 - 2-bromo butane
 - 2-bromo-2 methyl propane
- Halogenation of alkanes is [KCET 2002]
 - A reductive process
 - An oxidative process
 - An isothermal process
 - An endothermic process
- $$\begin{array}{c}
 + \\
 N \equiv NBF_4 \\
 | \\
 \text{C}_6\text{H}_6
 \end{array}
 \xrightarrow{\Delta} A$$
 In the above process product A is [Kerala (Engg.) 2002]
 - Fluorobenzene
 - Benzene
 - 1, 4-difluorobenzene
 - 1, 3-difluorobenzene
- Silver acetate + $Br_2 \xrightarrow{CS_2} \rightarrow$. The main product of this reaction is [Kurukshestra CET 2002]
 - $CH_3 - Br$
 - CH_3COI
 - CH_3COOH
 - None of these
- Diazonium salts + $Cu_2Cl_2 + HCl \rightarrow$ , the reaction is known as [Kerala (Med.) 2002]
 - Chlorination
 - Sandmeyer's reaction
 - Perkin reaction
 - Substitution reaction
- When ethyl alcohol (C_2H_5OH) reacts with thionyl chloride, in the presence of pyridine, the product obtained is [AIIMS; CBSE PMT 2001]
 - $CH_3CH_2Cl + HCl$
 - $C_2H_5Cl + HCl + SO_2$
 - $CH_3CH_2Cl + H_2O + SO_2$
 - $CH_3CH_2Cl + HCl + SO_2$
- Preparation of alkyl halides in laboratory is least preferred by [DPMT 2000]
 - Treatment of alcohols
 - Addition of hydrogen halides to alkenes
 - Halide exchange
 - Direct halogenation of alkanes
- Which of the following organic compounds will give a mixture of 1-chlorobutane and 2-chlorobutane on chlorination [CPMT 2001]
 - 2, 3-dimethyl pentane
 - 3-chloro-2, 3-dimethylpentane

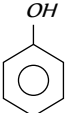
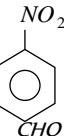


- (a) $\text{CH}_3 - \underset{\text{CH}_3}{\underset{|}{\text{CH}}} - \text{CH} = \text{CH}_2$
- (b) $\text{HC} \equiv \underset{\text{H}}{\underset{|}{\text{C}}} - \text{C} = \text{CH}_2$
- (c) $\text{CH}_2 = \text{CH} - \text{CH} = \text{CH}_2$
- (d) $\text{CH}_2 = \text{CH} - \text{CH}_2 - \text{CH}_3$
10. The chlorobenzene is generally obtained from a corresponding diazonium salt by reacting it with [MP PMT 2000]
- (a) Cu_2Cl_2 (b) CuSO_4
- (c) Cu (d) $\text{Cu}(\text{NH}_3)_4^{2+}$
11. Decreasing order of reactivity of HX in the reaction $\text{ROH} + \text{HX} \rightarrow \text{RX} + \text{H}_2\text{O}$ [RPET 2000; AIIMS 1983; MP PET 1996]
- (a) $\text{HI} > \text{HBr} > \text{HCl} > \text{HF}$ (b) $\text{HBr} > \text{HCl} > \text{HI} > \text{HF}$
- (c) $\text{HCl} > \text{HBr} > \text{HI} > \text{HF}$ (d) $\text{HF} > \text{HBr} > \text{HCl} > \text{HI}$
12. The product of the following reaction : [RPET 2000]
- $$\text{CH}_2 = \text{CH} - \text{CCl}_3 + \text{HBr}$$
- (a) $\text{CH}_3 - \text{CH}(\text{Br}) - \text{CCl}_3$ (b) $\text{CH}_2(\text{Br}) - \text{CH}_2 - \text{CCl}_3$
- (c) $\text{BrCH}_2 - \text{CHCl} - \text{CHCl}_2$ (d) $\text{CH}_3 - \text{CH}_2 - \text{CCl}_3$
13. Chlorobenzene is prepared commercially by [JIPMER 2000; CPMT 1976; Pb. CET 2002]
- (a) Raschig process (b) Wurtz Fitting reaction
- (c) Friedel-Craft's reaction (d) Grignard reaction
14. In methyl alcohol solution, bromine reacts with ethylene to yield $\text{BrCH}_2\text{CH}_2\text{OCH}_3$ in addition to 1, 2-dibromoethane because [Pb. PMT 1998]
- (a) The ion formed initially may react with Br^- or CH_3OH
- (b) The methyl alcohol solvates the bromine
- (c) The reaction follows Markownikoff's rule
- (d) This is a free-radical mechanism
15. $\text{C}_3\text{H}_8 + \text{Cl}_2 \xrightarrow{\text{Light}} \text{C}_3\text{H}_7\text{Cl} + \text{HCl}$ is an example of which of the following types of reactions [AFMC 1997; CPMT 1999]
- (a) Substitution (b) Elimination
- (c) Addition (d) Rearrangement
16. Which of the following would be produced when acetylene reacts with HCl [MH CET 1999]
- (a) $\text{CH}_3\text{CH}_2\text{Cl}$ (b) CH_3CHCl_2
- (c) $\text{CHCl} = \text{CHCl}$ (d) $\text{CH}_2 = \text{CHCl}$
17. $\text{R} - \text{OH} + \text{HX} \rightarrow \text{R} - \text{X} + \text{H}_2\text{O}$
In the above reaction, the reactivity of different alcohols is [CPMT 1997]
- (a) Tertiary > Secondary > Primary
- (b) Tertiary < Secondary < Primary
- (c) Tertiary < Secondary > Primary
- (d) Secondary < Primary < Tertiary
18. $\text{C}_6\text{H}_6 + \text{Cl}_2 \xrightarrow{\text{UV Light}}$ Product. In above reaction product is [CPMT 1997]
- (a) CCl_3CHO (b) $\text{C}_6\text{H}_6\text{Cl}_6$
- (c) $\text{C}_6\text{H}_{12}\text{Cl}_6$ (d) $\text{C}_6\text{H}_9\text{Cl}_2$
19. Benzene reacts with chlorine to form benzene hexachloride in presence of [MP PET 1999]
- (a) Nickel (b) AlCl_3
- (c) Bright sunlight (d) Zinc
20. The final product obtained by distilling ethyl alcohol with the excess of chlorine and $\text{Ca}(\text{OH})_2$ is [MP PET 1996]
- (a) CH_3CHO (b) CCl_3CHO
- (c) CHCl_3 (d) $(\text{CH}_3)_2\text{O}$
21. When ethyl alcohol and KI reacted in presence of Na_2CO_3 , yellow crystals of..... are formed [AFMC 1989]
- (a) CHI_3 (b) CH_3I
- (c) CH_2I_2 (d) $\text{C}_2\text{H}_5\text{I}$
22. In preparation of CHCl_3 from ethanol and bleaching powder, the latter provides [BHU 1986]
- (a) $\text{Ca}(\text{OH})_2$ (b) Cl_2
- (c) Both (a) and (b) (d) None of these
23. Which one of the following processes does not occur during formation of CHCl_3 from $\text{C}_2\text{H}_5\text{OH}$ and bleaching powder [DPMT 1984]
- (a) Hydrolysis (b) Oxidation
- (c) Reduction (d) Chlorination
24. Which of the following is obtained when chloral is boiled with NaOH [CBSE PMT 1991; RPMT 1999]
- (a) CH_3Cl (b) CHCl_3
- (c) CCl_4 (d) None of these
25. Chloroform can be obtained from [MNR 1986]
- (a) Methanol (b) Methanal
- (c) Propanol-1 (d) Propanol-2
26. Chlorine reacts with ethanol to give [MP PMT 1989; CPMT 1997; KCET 1998; JIPMER 1999]
- (a) Ethyl chloride (b) Chloroform
- (c) Acetaldehyde (d) Chloral
27. On heating diethyl ether with conc. HI , 2 moles of which of the following is formed [IIT-JEE 1983; MP PET 1990; EAMCET 1990; AFMC 1993; JIPMER 2001]
- (a) Ethanol (b) Iodoform
- (c) Ethyl iodide (d) Methyl iodide
28. Lucas reagent is [MP PMT 1996; MP PET 1992, 95; CPMT 1986, 89; AIIMS 1980; Kurukshetra CEE 2002]
- (a) Concentrated HCl + anhydrous ZnCl_2
- (b) Dilute HCl + hydrated ZnCl_2
- (c) Concentrated HNO_3 + anhydrous ZnCl_2
- (d) Concentrated HCl + anhydrous MgCl_2
29. Which compound does not form iodoform with alkali and iodine [IIT-JEE 1985]
- (a) Acetone (b) Ethanol
- (c) Diethyl ketone (d) Isopropyl alcohol
30. Which compound gives yellow ppt. with iodine and alkali [IIT-JEE 1984]
- (a) 2-hydroxy propane (b) Acetophenone
- (c) Methyl acetone (d) Acetamide
31. Acetone reacts with I_2 in presence of NaOH to form [MP PMT 1992]
- (a) $\text{C}_2\text{H}_5\text{I}$ (b) $\text{C}_2\text{H}_4\text{I}_2$
- (c) CHI_3 (d) CH_3I
32. Ethanol is converted into ethyl chloride by reacting with [MP PET 1991; MP PMT 1990; BHU 1997]
- (a) Cl_2 (b) SOCl_2
- (c) HCl (d) NaCl
33. $\text{C}_6\text{H}_5\text{Cl}$ prepared by aniline with [IIT-JEE 1984]
- (a) HCl

- (b) Cu_2Cl_2
 (c) Cl_2 in presence of anhydrous $AlCl_3$
 (d) HNO_2 and then heated with Cu_2Cl_2
34. The starting substance for the preparation of CH_3I is [CPMT 1975]
 (a) CH_3OH (b) C_2H_5OH
 (c) CH_3CHO (d) $(CH_3)_2CO$
35. A Grignard's reagent may be made by reacting magnesium with [CPMT 1975, 83, 84]
 (a) Methyl amine (b) Diethyl ether
 (c) Ethyl iodide (d) Ethyl alcohol
36. Which of the following is responsible for iodoform reaction [CPMT 1980; RPMT 1997]
 (a) Formalin (b) Methanol
 (c) Acetic acid (d) Ethanol
37. When a solution of sodium chloride containing ethyl alcohol is electrolysed, it forms
 (a) Ethyl alcohol (b) Chloral
 (c) Chloroform (d) Acetaldehyde
38. Which reagent cannot be used to prepare an alkyl halide from an alcohol [CPMT 1989, 94]
 (a) $HCl + ZnCl_2$ (b) $NaCl$
 (c) PCl_5 (d) $SOCl_2$
39. Ethyl benzoate reacts with PCl_5 to give [KCET 2003]
 (a) $C_2H_5Cl + C_6H_5COCl + POCl_3 + HCl$
 (b) $C_2H_5Cl + C_6H_5COCl + POCl_3$
 (c) $CH_3COCl + C_6H_5COCl + POCl_3$
 (d) $C_2H_5Cl + C_6H_5COOH + POCl_3$
40. On treatment with chlorine in presence of sunlight, toluene gives the product [Orissa JEE 2003; MH CET 1999, 2002]
 (a) *o*-chloro toluene (b) 2, 5-dichloro toluene
 (c) *p*-chloro toluene (d) Benzyl chloride
41. When chlorine is passed through warm benzene in presence of the sunlight, the product obtained is [KCET 2003]
 (a) Benzotrichloride (b) Chlorobenzene
 (c) Gammexane (d) DDT
42. Which of the following acids adds to propene in the presence of peroxide to give anti-Markownikoff's product [MP PET 2003]
 (a) HF (b) HCl
 (c) HBr (d) HI
43. Propene on treatment with HBr gives [CPMT 1986]
 (a) Isopropyl bromide (b) Propyl bromide
 (c) 1, 2-dibromoethane (d) None of the above
44. The catalyst used in Raschig's process is
 (a) $LiAlH_4$ (b) Copper chloride
 (c) Sunlight (d) Ethanol/ Na
45. The compound formed on heating chlorobenzene with chloral in the presence of concentrated sulphuric acid, is [AIEEE 2004]
 (a) Freon (b) DDT
 (c) Gammexane (d) Hexachloroethane
46. Acetone is mixed with bleaching powder to give [AFMC 2004]
 (a) Chloroform (b) Acetaldehyde
 (c) Ethanol (d) Phosgene
47. Which of the following compounds gives trichloromethane on distilling with bleaching powder [KCET 2004; EAMCET 1986]
 (a) Methanal (b) Phenol
 (c) Ethanol (d) Methanol
48. The product formed on reaction of ethyl alcohol with bleaching powder is [Orissa JEE 2004; DPMT 1978; AIIMS 1991]
 (a) $CHCl_3$ (b) CCl_3CHO
 (c) CH_3COCH_3 (d) CH_3CHO
49. Ethylene reacts with bromine to form [Pb. CET 2000]
 (a) Chloroethane (b) Ethylene dibromide
 (c) Cyclohexane (d) 1-bromo propane
50. Best method of preparing alkyl chloride is [MH CET 2004]
 (a) $ROH + SOCl_2 \longrightarrow$
 (b) $ROH + PCl_5 \longrightarrow$
 (c) $ROH + PCl_3 \longrightarrow$
 (d) $ROH + HCl \xrightarrow{\text{anhy. } ZnCl_2}$
51. DDT is prepared by reacting chlorobenzene with [BHU 1998, 2005]
 (a) CCl_4 (b) $CCl_3 - CHO$
 (c) $CHCl_3$ (d) Ethane
52. Which compound needs chloral in its synthesis [Pb. PET 2003]
 (a) D. D. T. (b) Gammexane
 (c) Chloroform (d) Michler's Ketone
53. To get DDT, chlorobenzene has to react with which of the following compounds in the presence of concentrated sulphuric acid [KCET (Engg./Med.) 2003]
 (a) Trichloroethane (b) Dichloroacetone
 (c) Dichloroacetaldehyde (d) Trichloroacetaldehyde
54. What will be the product in the following reaction [BHU 2005]
- 
- (a)  (b) 
 (c)  (d) 

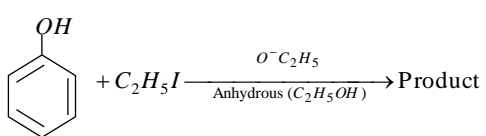
Properties of Halogen containing compounds

1.  A. Compounds A is [Orissa JEE 2005]
- (a)  (b) 
 (c)  (d) 
2. Ethyl bromide can be converted into ethyl alcohol by [KCET 1989]
 (a) Heating with dilute hydrochloric acid and zinc

- (b) Boiling with an alcoholic solution of KOH
 (c) The action of moist silver oxide
 (d) Refluxing methanol
3. Reaction of ethyl chloride with sodium leads to [NCERT 1984]
 (a) Ethane (b) Propane
 (c) n -butane (d) n -pentane
4. Treatment of ammonia with excess of ethyl chloride will yield [AIIMS 1992]
 (a) Diethyl amine
 (b) Ethane
 (c) Tetraethyl ammonium chloride
 (d) Methyl amine
5. $2CHCl_3 + O_2 \xrightarrow{X} 2COCl_2 + 2HCl$
 In the above reaction, X stands for [CPMT 1985]
 (a) An oxidant (b) A reductant
 (c) Light and air (d) None of these
6. Phosgene is the common name for [DPMT 1983; CPMT 1993; MP PMT 1994; Kurukshetra CEE 1998; RPMT 2000, 02]
 (a) CO_2 and PH_3 (b) Phosphoryl chloride
 (c) Carbonyl chloride (d) Carbon tetrachloride
7. When chloroform is treated with amine and KOH , we get [CPMT 1979]
 (a) Rose odour smell
 (b) Sour almond like smell
 (c) Offensive odour
 (d) Sour oil of winter green like smell
8. A mixture of two organic chlorine compounds was treated with sodium metal in ether solution. Isobutane was obtained as a product. The two chlorine compounds are [KCET 1988]
 (a) Methyl chloride and propyl chloride
 (b) Methyl chloride and ethyl chloride
 (c) Isopropyl chloride and methyl chloride
 (d) Isopropyl chloride and ethyl chloride
9. Alkyl halides can be converted into Grignard reagents by [KCET 1989]
 (a) Boiling them with Mg ribbon in alcoholic solution
 (b) Warming them with magnesium powder in dry ether
 (c) Refluxing them with $MgCl_2$ solution
 (d) Warming them with $MgCl_2$
10. Which is not present in Grignard reagent [CBSE PMT 1991]
 (a) Methyl group (b) Magnesium
 (c) Halogen (d) $-COOH$ group
11. The reactivity of ethyl chloride is [KCET 1986]
 (a) More or less equal to that of benzyl chloride
 (b) More than that of benzyl chloride
 (c) More or less equal to that of chlorobenzene
 (d) Less than that of chlorobenzene
12. The reactivity of halogen atom is minimum in [KCET 1985]
 (a) Propyl chloride (b) Propyl iodide
 (c) Isopropyl chloride (d) Isopropyl bromide
13. Chlorobenzene is
 (a) Less reactive than benzyl chloride
 (b) More reactive than ethyl bromide
 (c) Nearly as reactive as methyl chloride
 (d) More reactive than isopropyl chloride
14. The reactivities of methyl chloride, propyl chloride and chlorobenzene are in the order [KCET 1988]
 (a) Methyl chloride > propyl chloride > chlorobenzene
 (b) Propyl chloride > methyl chloride > chlorobenzene
 (c) Methyl chloride > chlorobenzene > propyl chloride
 (d) Chlorobenzene > propyl chloride > methyl chloride
15. Which of the following compound will make precipitate most readily with $AgNO_3$ [CPMT 1992]
 (a) CCl_3CHO (b) $CHCl_3$
 (c) $C_6H_5CH_2Cl$ (d) CHI_3
16. Carbylamine is liberated when..... is heated with chloroform and alcoholic potash [KCET 1992]
 (a) An aldehyde (b) A primary amine
 (c) A secondary amine (d) A phenol
17. Salicylic acid can be prepared using Reimer-Tiemann's reaction by treating phenol with [KCET 1989]
 (a) Methyl chloride in the presence of anhydrous aluminium chloride
 (b) Carbon dioxide under pressure in sodium hydroxide solution
 (c) Carbon tetrachloride and concentrated sodium hydroxide
 (d) Sodium nitrite and a few drops of concentrated sulphuric acid
18. Grignard reagent is prepared by the reaction between [CBSE PMT 1994; DPMT 1996; Pb. PMT 1999; MH CET 1999]
 (a) Zinc and alkyl halide
 (b) Magnesium and alkyl halide
 (c) Magnesium and alkane
 (d) Magnesium and aromatic hydrocarbon
19. Reaction of t -butyl bromide with sodium methoxide produces [CBSE PMT 1994]
 (a) Isobutane (b) Isobutylene
 (c) Sodium t -butoxide (d) t -butyl methyl ether
20. War gas is formed from [BHU 1995]
 (a) PH_3 (b) C_2H_2
 (c) Zinc phosphate (d) Chloropicrin
21. What happens when CCl_4 is treated with $AgNO_3$ [EAMCET 1987; CBSE PMT 1988; MP PET 2000]
 (a) NO_2 will be evolved
 (b) A white ppt. of $AgCl$ will be formed
 (c) CCl_4 will dissolve in $AgNO_3$
 (d) Nothing will happen
22. If we use pyrene (CCl_4) in the Reimer-Tiemann reaction in place of chloroform, the product formed is [CBSE PMT 1989; MP PMT 1990; MH CET 1999]
 (a) Salicylaldehyde (b) Phenolphthalein
 (c) Salicylic acid (d) Cyclohexanol
23. $C_6H_5CH_2Cl + KCN(aq.) \rightarrow X + Y$
 Compounds X and Y are [BHU 1979]
 (a) $C_6H_6 + KCl$ (b) $C_6H_5CH_2CN + KCl$
 (c) $C_6H_5CH_3 + KCl$ (d) None of these
24. The bad smelling substance formed by the action of alcoholic caustic potash on chloroform and aniline is [MP PMT 1971, 92, 2001; CPMT 1971, 86; AFMC 2002; RPMT 1999]
 (a) Phenyl isocyanide (b) Nitrobenzene
 (c) Phenyl cyanide (d) Phenyl isocyanate
25. Ethylidene chloride on treatment with aqueous KOH gives [MP PMT 1986]
 (a) Ethylene glycol (b) Acetaldehyde
 (c) Formaldehyde (d) None

26. Reaction $C_2H_5I + C_5H_{11}I + 2Na \rightarrow C_2H_5 - C_5H_{11} + 2NaI$ is called
[MP PMT 1992]
- (a) Hoffmann's reaction
(b) Dow's reaction
(c) Wurtz's reaction
(d) Riemer-Tiemann's reaction
27. In presence of $AlCl_3$, benzene and *n*-propyl bromide react in Friedal-Craft's reaction to form
[MP PMT 1991]
- (a) *n*-propyl benzene
(b) 1, 2-dinormal propyl benzene
(c) 1, 4-dinormal propyl benzene
(d) Isopropyl benzene
28. The dehydrobromination of 2-bromobutane gives $CH_3CH = CHCH_3$. The product is
- (a) Hofmann product
(b) Saytzeff product
(c) Hoffmann-Saytzeff product
(d) Markownikoff product
29. Ethylene difluoride on hydrolysis gives
- (a) Glycol (b) Fluoroethanol
(c) Difluoroethanol (d) Freon
30. Benzyl chloride when oxidised by $pb(NO_3)_2$ gives
[MP PMT 1989]
- (a) Benzoic acid (b) Benzaldehyde
(c) Benzene (d) None
31. Which of the following statements about chloroform is false
[Manipal MEE 1995]
- (a) It is a colourless, sweet-smelling liquid
(b) It is almost insoluble in water
(c) It is highly inflammable
(d) It can be used as an inhalational anaesthetic agent
32. CCl_4 cannot give precipitate with $AgNO_3$ due to
[CPMT 1979]
- (a) Formation of complex with $AgNO_3$
(b) Evolution of Cl_2 gas
(c) Chloride ion is not formed
(d) $AgNO_3$ does not give silver ion
33. On heating $CHCl_3$ with aq. $NaOH$, the product is
[CPMT 1971, 78; BHU 1997; EAMCET 1998; JIPMER (Med.) 2002]
- (a) CH_3COONa (b) $HCOONa$
(c) Sodium oxalate (d) CH_3OH
34. Ethyl bromide reacts with lead-sodium alloy to form
[MP PMT/PET 1988; MP PET 1997]
- (a) Tetraethyl lead (b) Tetraethyl bromide
(c) Both (a) and (b) (d) None of the above
35. Iodoform heated with Ag powder to form
[DPMT 1985]
- (a) Acetylene (b) Ethylene
(c) Methane (d) Ethane
36. Ethyl bromide reacts with silver nitrite to form
[DPMT 1985; IIT-JEE 1991]
- (a) Nitroethane
(b) Nitroethane and ethyl nitrite
(c) Ethyl nitrite
(d) Ethane
37. Which of the following reactions leads to the formation of chloritone [RPMT 2003]
- (a) $CHCl_3 + CH_3COCH_3$ (b) $CCl_4 +$ Acetone
- (c) $CHCl_3 + KOH$ (d) $CHCl_3 + HNO_3$
38. $CH_3 - CH_2 - CH_2Br + KOH$ (alc.) \rightarrow Product Product in above reaction is
[RPMT 2003]
- (a) $CH_3 - CH = CH_2$ (b) $CH_3 - CH_2 - CH_3$
(c) (a) and (b) both (d) None of these
39. $A + CCl_4 + KOH \rightarrow$ Salicylic acid
'A' in above reaction is
[RPMT 2003]
- (a)  (b) 
(c)  (d) 
40. Identify X and Y in the following sequence
 $C_2H_5Br \xrightarrow{X} \text{product} \xrightarrow{Y} C_3H_7NH_2$
[Orissa JEE 2005]
- (a) $X = KCN, Y = LiAlH_4$
(b) $X = KCN, Y = H_3O^+$
(c) $X = CH_3Cl, Y = AlCl_3 / HCl$
(d) $X = CH_3NH_2, Y = HNO_2$
41. 1-chlorobutane reacts with alcoholic KOH to form
[IIT-JEE 1991; AFMC 1998]
- (a) 1-butene (b) 2-butane
(c) 1-butanol (d) 2-butanol
42. Which of the following reactions gives $H_2C = C = C = CH_2$ [Roorkee Qualify]
- (a) $CH_2Br - CBr = CH_2 \xrightarrow{Zn / CH_3OH} \rightarrow$
(b) $HC \equiv C - CH_2 - COOH \xrightarrow[40^\circ C]{Aq. K_2CO_3} \rightarrow$
(c) $CH_2Br - C \equiv C - CH_2Br \xrightarrow[Heat]{Zn} \rightarrow$
(d) $2CH_2 = CH - CH_2I \longrightarrow$
43. When ethyl amine is heated with chloroform and alcoholic KOH , a compound with offensive smell is obtained. This compound is [CPMT 1983, 84;]
- (a) A secondary amine (b) An isocyanide
(c) A cyanide (d) An acid
44. Chlorobenzene on fusing with solid $NaOH$ gives
[DPMT 1981; CPMT 1990]
- (a) Benzene (b) Benzoic acid
(c) Phenol (d) Benzene chloride
45. DDT can be prepared by reacting chlorobenzene (in the presence of conc. H_2SO_4) with
- (a) Cl_2 in ultraviolet light (b) Chloroform
(c) Trichloroacetone (d) Chloral hydrate
46. When phenol reacts with $CHCl_3$ and KOH , the product obtained would be
[RPMT 1997]
- (a) Salicylaldehyde (b) *p*-hydroxy benzaldehyde
(c) Both (a) and (b) (d) Chlorotone
47. Ethyl chloride on heating with silver cyanide forms a compound X . The functional isomer of X is
[EAMCET 1997; KCET 2005]
- (a) C_2H_5NC (b) C_2H_5CN

- (c) $H_3C-NH-CH_3$ (d) $C_2H_5NH_2$
48. Which of the following statements is incorrect [CPMT 1977]
 (a) C_2H_5Br reacts with alcoh. KOH to form C_2H_5OH
 (b) C_2H_5Br when treated with metallic sodium gives ethane
 (c) C_2H_5Br when treated with sodium ethoxide forms diethyl ether
 (d) C_2H_5Br with $AgCN$ forms ethyl isocyanide
49. When chloroform is exposed to air and sunlight, it gives [NCERT 1984; CPMT 1978, 87; CBSE PMT 1990; EAMCET 1993; MNR 1994; MP PET 1997, 2000; BHU 2001; AFMC 2002]
 (a) Carbon tetrachloride (b) Carbonyl chloride
 (c) Mustard gas (d) Lewisite
50. An organic halide is shaken with aqueous $NaOH$ followed by the addition of dil. HNO_3 and silver nitrate solution gave white ppt. The substance can be [JIPMER 1997]
 (a) $C_6H_4(CH_3)Br$ (b) $C_6H_5CH_2Cl$
 (c) C_6H_5Cl (d) None of these
51. A compound A has a molecular formula C_2Cl_3OH . It reduces Fehling solution and on oxidation gives a monocarboxylic acid (B). A is obtained by action of chlorine on ethyl alcohol. A is [CBSE PMT 1994; MP PET 1997; KCET 2005]
 (a) Chloral (b) $CHCl_3$
 (c) CH_3Cl (d) Chloroacetic acid
52. Following equation illustrates

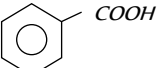
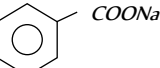
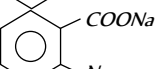
$$C_6H_5Cl + 2NaOH \xrightarrow[200\text{ atm}]{200-250^\circ C} C_6H_5ONa + NaCl + H_2O$$
 [Bihar CEE 1995]
 (a) Dow's process (b) Kolbe's process
 (c) Carbylamine test (d) Haloform reaction
53. One of the following that cannot undergo dehydro-halogenation is [J & K 2005]
 (a) Iso-propyl bromide (b) Ethanol
 (c) Ethyl bromide (d) None of these
54. A compound X on reaction with chloroform and $NaOH$ gives a compound with a very unpleasant odour. X is [MP PMT 1999]
 (a) $C_6H_5CONH_2$ (b) $C_6H_5NH_2$
 (c) $C_6H_5CH_2NHCH_3$ (d) $C_6H_5NHCH_3$
55. 
 In the above reaction product is
 (a) $C_6H_5OC_2H_5$ (b) $C_2H_5OC_2H_5$
 (c) $C_6H_5OC_6H_5$ (d) C_6H_5I
56. $C_2H_5Cl + KCN \longrightarrow X \xrightarrow{\text{Hydrolysis}} Y$. ' X ' and ' Y ' are [MP PET 1995]
 (a) C_2H_6 and C_2H_5CN
 (b) C_2H_5CN and C_2H_6
 (c) C_2H_5CN and $C_2H_5CH_2NH_2$
 (d) C_2H_5CN and C_2H_5COOH
57. Iodoform is formed on warming I_2 and $NaOH$ with [MP PET 1995; DCE 1999; RPET 1999; RPMT 2002]
 (a) C_2H_5OH (b) CH_3OH
 (c) $HCOOH$ (d) C_6H_6
58. Which of the following reacts with phenol to give salicylaldehyde after hydrolysis [MP PMT 1995]
 (a) Dichloromethane (b) Trichloromethane
 (c) Methyl chloride (d) None of these
59. Dehydrohalogenation in monohaloalkanes produces
 (a) A single bond (b) A double bond
 (c) A triple bond (d) Fragmentation
60. When chloroform is treated with conc. HNO_3 it gives [CPMT 1986; MP PMT 1989; AFMC 1998, 99; EAMCET 1991; BHU 1999]
 (a) $CHCl_2NO_2$ (b) CCl_3NO_2
 (c) $CHCl_2HNO_3$ (d) None of these
61. A sample of chloroform being used as anaesthetic is tested by [AIIMS 1980; CPMT 1997]
 (a) Fehling solution
 (b) Ammoniacal Cu_2Cl_2
 (c) $AgNO_3$ solution
 (d) $AgNO_3$ solution after boiling with alcoholic KOH solution
62. Dehydrohalogenation of an alkyl halide is [MP PMT 1996]
 (a) An addition reaction (b) A substitution reaction
 (c) An elimination reaction (d) An oxidation reaction
63. Reaction of aqueous sodium hydroxide on (i) ethyl bromide and (ii) chlorobenzene gives
 (a) (i) Ethene and (ii) o -chlorophenol
 (b) (i) Ethyl alcohol and (ii) o -chlorophenol
 (c) (i) Ethyl alcohol and (ii) phenol
 (d) (i) Ethyl alcohol and (ii) no reaction
64. 2-bromopentane is heated with potassium ethoxide in ethanol. The major product obtained is [CBSE PMT 1998]
 (a) Pentene-1 (b) cis pentene-2
 (c) $trans$ pentene-2 (d) 2-ethoxypentane
65. What is the product formed in the following reaction [KCET 1998]

$$C_6H_5OH + CCl_4 \xrightarrow[(2) H^+]{(1) NaOH}$$

 (a) p -hydroxybenzoic acid (b) o -hydroxybenzoic acid
 (c) Benzaldehyde (d) Salicylaldehyde
66. When chloroform is treated with excess oxygen it forms [MH CET 1999]
 (a) $COCl_2 + HCl$
 (b) $COCl_2 + Cl_2 + H_2$
 (c) $COCl_2 + Cl_2 + H_2O$
 (d) No product will be formed
67. Which isomer of cyclohexane hexachloride is a very strong insecticide [MP PET 2003]
 (a) α (b) β
 (c) γ (d) δ
68. Haloalkane in the presence of alcoholic KOH undergoes [KCET (Engg./Med.) 2002]
 (a) Elimination (b) Polymerisation
 (c) Dimerisation (d) Substitution
69. The set of compounds in which the reactivity of halogen atom in the ascending order is [KCET (Engg.) 2002]
 (a) Vinyl chloride, chloroethane, chlorobenzene
 (b) Vinyl chloride, chlorobenzene, chloroethane
 (c) Chloroethane, chlorobenzene, vinyl chloride
 (d) Chlorobenzene, vinyl chloride chloroethane
70. Alkyl halides react with Mg in dry ether to form [DPMT 2000; MP PET 2001]

- (a) Magnesium halide (b) Grignard's reagent
(c) Alkene (d) Alkyne
71. In the following sequence of reactions

$$CH_3CH_2CH_2Br \xrightarrow{KOH(alc)} (A) \xrightarrow{HBr} (B) \xrightarrow{KOH(aq.)} (C),$$
 The product (C) is [JIPMER 2001]
 (a) Propan - 2 - ol (b) Propan - 1 - ol
 (c) Propyne (d) Propene
72. Alkyl halide on heating with alc. NH_3 in a sealed tube results... [Orissa JEE 2002]
 (a) 1° amine (b) 2° amine
 (c) 3° amine (d) All of these
73. When $CH_3CH_2CHCl_2$ is treated with $NaNH_2$, the product formed is [CBSE PMT 2002]
 (a) $CH_3 - CH = CH_2$ (b) $CH_3 - C \equiv CH$
 (c) $CH_3CH_2CH(NH_2)(Cl)$ (d) $CH_3CH_2C(NH_2)_2$
74. By heating a mixture of $CHCl_3$ with silver powder, the compound formed is [Kurukshetra CET 2002]
 (a) Acetylene (b) Silver acetate
 (c) Methanol (d) None of these
75. Chloropicrin is [Kurukshetra CET 2002]
 (a) Trichloro acetaldehyde (b) Nitrochloroform
 (c) 2,4,6-trinitro phenol (d) None of these
76. Which of the following are correct statements about C_2H_5Br [Roorkee 1999]
 (a) It reacts with metallic Na to give ethane
 (b) It gives nitroethane on heating with aqueous ethanolic solution of $AgNO_2$
 (c) It gives C_2H_5OH on boiling with alcoholic potash
 (d) It forms ethylacetate on heating with silver acetate
77. Aryl halide is less reactive than alkyl halide towards nucleophilic substitution because [RPMT 2002]
 (a) Less stable carbonium ion
 (b) Due to large $C - Cl$ bond energy
 (c) Inductive effect
 (d) Resonance stabilization and sp^2 - hybridisation of C attached to halide
78. Methyl chloride reacts with silver acetate to yield [BVP 2003]
 (a) Acetaldehyde (b) Acetyl chloride
 (c) Methyl acetate (d) Acetic acid
79. Chloroform for anesthetic purposes is tested for its purity with the reagent [DPMT 2001]
 (a) Silver nitrate (b) Lead nitrate
 (c) Ammoniacal Cu_2Cl_2 (d) Lead nitrate
80. 2, 6 - Dimethylheptane on monochlorination produces..... derivatives [DPMT 2001]
 (a) 5 (b) 6
 (c) 3 (d) 4
81. The less reactivity of chlorine atom in $CH_2 = CH - Cl$ is due to [DCE 2001]
 (a) Inductive effect (b) Resonance stabilization
 (c) Electromeric effect (d) Electronegativity
82. $CH_3 - CH_2 - Br \xrightarrow{alc.KCN} CH_3CH_2CN \xrightarrow{HOH} X$
 In this reaction, product X is [MH CET 2002]
 (a) Acetic acid (b) Propionic acid
 (c) Butyric acid (d) Formic acid
83. In alkaline hydrolysis of a tertiary alkyl halide by aqueous alkali if concentration of alkali is doubled, then the reaction [MH CET 2002]
 (a) Will be doubled (b) Will be halved
 (c) Will remain constant (d) Can't say
84. $AgNO_3$ does not give precipitate with $CHCl_3$ because [MP PET 1999; CPMT 2002]
 (a) $CHCl_3$ does not ionise in water
 (b) $AgNO_3$ does not reacts with $CHCl_3$
 (c) $CHCl_3$ is chemically inert
 (d) None of these
85. The reaction between chlorobenzene and chloral in the presence of concentrated sulphuric acid produces [Pb. PMT 2001]
 (a) Gammexane
 (b) *p,p*-dichloro diphenyl trichloro ethane
 (c) Chloropicrin
 (d) Benzene hexachloride
86. False statement is [RPET 1999]
 (a) Chloroform is heavier than water
 (b) CCl_4 is non-inflammable
 (c) Vinyl chloride is more reactive than allyl chloride
 (d) Br^- is a good nucleophile as compared to I^-
87. Chloroform is slowly oxidise by air in presence of light to form [MH CET 1999; U
 (a) Formyl chloride (b) Phosgene
 (c) Trichloroacetic acid (d) Formic acid
88. Alcoholic potash is used to bring about [KCET (Engg.) 2001]
 (a) Dehydrogenation (b) Dehydration
 (c) Dehydrohalogenation (d) Dehalogenation
89. Vinyl chloride reacts with HCl to form [JIPMER 2000]
 (a) 1, 1- dichloro ethane
 (b) 1, 2- dichloro ethane
 (c) Tetrachloro ethylene
 (d) Mixture of 1, 2 and 1, 1 - dichloro ethane
90. $R - X + NaOH \longrightarrow ROH + NaX$
 The above reaction is classified as [BHU 1982; CBSE PMT 1991; RPET 2000]
 (a) Nucleophilic substitution
 (b) Electrophilic substitution
 (c) Reduction
 (d) Oxidation
91. Reduction of acetyl chloride with H_2 in presence of Pd gives [MP PMT 2001]
 (a) CH_3COCH_3 (b) C_2H_5OH
 (c) CH_3COOH (d) CH_3CHO
92. When methyl bromide is heated with Zn it gives [MP PMT 2001]
 (a) CH_4 (b) C_2H_6
 (c) C_2H_4 (d) CH_3OH
93. Phenol reacts with $CHCl_3$ and $NaOH$ (at 340K) to give [MP PMT 1997; CBSE PMT 2002]
 (a) *o*-chlorophenol (b) Salicylaldehyde
 (c) Benzaldehyde (d) Chlorobenzene
94. Iodoform on heating with KOH gives [MP PMT 2000]
 (a) CH_3CHO (b) CH_3COOK
 (c) $HCOOK$ (d) $HCHO$
95. Which reaction is correct in the conversion of chloroform to acetylene [Pb. PMT 2000]
 (a) $CHCl_3 + AgNO_3$ (b) $CHCl_3 + O_2$
 (c) $CHCl_3 + HNO_3$ (d) $CHCl_3 + Ag$
96. Which of the following gases are poisonous [Pb. PMT 2000]

- (a) $CHCl_3$ (b) CO_2
(c) None of these (d) CO
97. Which of the following alkyl halide is used as a methylating agent [KCET (Med.) 2000; MP PET 1999]
(a) CH_3I (b) C_2H_5Br
(c) C_2H_5Cl (d) C_6H_5Cl
98. $C_6H_6Cl_6$, on treatment with alcoholic KOH , yields [AFMC 2000]
(a) C_6H_6 (b) $C_6H_3Cl_3$
(c) $(C_6H_6)OH$ (d) $C_6H_6Cl_4$
99. When ethyl iodide is heated with silver nitrate, the product obtained is [CPMT 2000]
(a) C_2H_5Ag (b) $Ag-O-NO_2$
(c) $C_2H_5O-NO_2$ (d) $C_2H_5I-NO_2$
100. $CHCl_3$ and HF lead to the formation of a compound of fluorine of molecular weight 70. The compound is [RPET 2000]
(a) Fluoroform (b) Fluorine monoxide
(c) Fluorine dioxide (d) Fluoromethanol
101. Chloroform with zinc dust in water gives [UPSEAT 2000]
(a) CH_4 (b) Chloropicrin
(c) CCl_4 (d) CH_2Cl_2
102. Which of the following is used as a catalyst for preparing Grignard reagent [KCET 1998]
(a) Iron powder (b) Iodine powder
(c) Activated charcoal (d) Manganese dioxide
103. For a given alkyl group the densities of the halides follow the order [MP PMT 1997]
(a) $RI < RBr < RCl$ (b) $RI < RCl < RBr$
(c) $RBr < RI < RCl$ (d) $RCl < RBr < RI$
104. Which halide will be least reactive in respect to hydrolysis [MP PET 2003]
(a) Vinyl chloride (b) Allyl chloride
(c) Ethyl chloride (d) t -Butyl chloride
105. In nucleophilic aliphatic substitution, the nucleophiles are generally
(a) Acids (b) Bases
(c) Salts (d) Neutral molecules
106. Which one of the following compounds does not react with bromine [DPMT 1983]
(a) Ethylamine (b) Propene
(c) Phenol (d) Chloroform
107. Allyl chloride on dehydro chlorination gives [Kerala (Med.) 2003]
(a) Propadiene (b) Propylene
(c) Acetylchloride (d) Acetone
108. Toluene reacts with excess of Cl_2 in presence of sunlight to give a product which on hydrolysis followed by reaction with $NaOH$ gives [Orissa JEE 2004]
(a)  (b) 
(c)  (d) None of these
109. An alkyl bromide produces a single alkene when it reacts with sodium ethoxide and ethanol. This alkene undergoes hydrogenation and produces 2-methyl butane. What is the identity of the alkyl bromide [Kerala PMT 2004]
(a) 1-bromo-2, 2-dimethylpropane
(b) 1-bromobutane
(c) 1-bromo-2-methylbutane
(d) 2-bromo-2-methylbutane
(e) 2-bromopentane
110. On treating a mixture of two alkyl halides with sodium metal in dry ether, 2-methyl propane was obtained. The alkyl halides are [KCET 2004]
(a) 2-chloropropane and chloromethane
(b) 2-chloropropane and chloroethane
(c) Chloromethane and chloroethane
(d) Chloromethane and 1-chloropropane
111. In which case formation of butane nitrile is possible [Orissa JEE 2004]
(a) $C_3H_7Br + KCN$ (b) $C_4H_9Br + KCN$
(c) $C_3H_7OH + KCN$ (d) $C_4H_9OH + KCN$
112. The reaction of an aromatic halogen compound with an alkyl halides in presence of sodium and ether is called [MP PMT 2004]
(a) Wurtz reaction
(b) Sandmeyer's reaction
(c) Wurtz-fittig reaction
(d) Kolbe reaction
113. The compound added to prevent chloroform to form phosgene gas is [MP PET 2004]
(a) C_2H_5OH (b) CH_3COOH
(c) CH_3COCH_3 (d) CH_3OH
114. Among the following, the one which reacts most readily with ethanol is [AIIMS 2004]
(a) p -nitrobenzyl bromide
(b) p -chlorobenzyl bromide
(c) p -methoxybenzyl bromide
(d) p -methylbenzyl bromide
115. Chloropicrin is obtained by the reaction of [CBSE PMT 2004]
(a) Chlorine on picric acid
(b) Nitric acid on chloroform
(c) Steam on carbon tetrachloride
(d) Nitric acid on chlorobenzene
116. In Wurtz reaction alkyl halide react with [MH CET 2004]
(a) Sodium in ether (b) Sodium in dry ether
(c) Sodium only (d) Alkyl halide in ether
117. Chloroform, when kept open, is oxidised to [CPMT 2004]
(a) CO_2 (b) $COCl_2$
(c) CO_2, Cl_2 (d) None of these
118. Chloroform reacts with concentrated HNO_3 to give [Pb. CET 2000]
(a) Water gas (b) Tear gas
(c) Laughing gas (d) Producer gas
119. When ethyl chloride and alcoholic KOH are heated, the compound obtained is [MH CET 2003]
(a) C_2H_4 (b) C_2H_2
(c) C_6H_6 (d) C_2H_6
120. Chloroform, on warming with Ag powder, gives [MH CET 2003]
(a) C_2H_6 (b) C_3H_8
(c) C_2H_4 (d) C_2H_2
121. When alkyl halide is heated with dry Ag_2O , it produces [CPMT 1997; BHU 2004]
(a) Ester (b) Ether
(c) Ketone (d) Alcohol
122. Reaction of alkyl halides with aromatic compounds in presence of anhydrous $AlCl_3$ is known as [UPSEAT 2004]

- (a) Friedal-Craft reaction
(b) Hofmann degradation
(c) Kolbe's synthesis
(d) Beckmann rearrangement
123. Two percent of ethanol is added during the oxidation of chloroform to stop the formation of carbonyl chloride. In this reaction ethanol acts as [Pb. CET 2001]
(a) Auto catalyst (b) Negative catalyst
(c) Positive catalyst (d) None of these
124. When benzene is heated with chlorine in the presence of sunlight, it forms [Pb. CET 2000]
(a) B.H.C. (b) Cyclopropane
(c) *p*-dichlorobenzene (d) None of these
125. Ethylene di bromide on heating with metallic sodium in ether solution yields [Pb. CET 2004]
(a) Ethene (b) Ethyne
(c) 2-butene (d) 1-butene
126. The reaction, $CH_3Br + Na \rightarrow$ Product, is called [Pb. CET 2003]
(a) Perkin reaction (b) Levit reaction
(c) Wurtz reaction (d) Aldol condensation
127. At normal temperature iodoform is [MP PET 2004]
(a) Thick viscous liquid (b) Gas
(c) Volatile liquid (d) Solid
128. Which of the following statements about benzyl chloride is incorrect [KCET 2004]
(a) It is less reactive than alkyl halides
(b) It can be oxidised to benzaldehyde by boiling with copper nitrate solution
(c) It is a lachrymatory liquid and answers Beilstein's test
(d) It gives a white precipitate with alcoholic silver nitrate
129. Ethylene dichloride and ethylidene chloride are isomeric compounds. The false statement about these isomers is that they [DCE 2003]
(a) React with alcoholic potash and give the same product
(b) Are position isomers
(c) Contain the same percentage of chlorine
(d) Are both hydrolysed to the same product
130. An alkyl bromide (*X*) reacts with *Na* to form 4, 5-diethyloctane. Compound *X* is [Roorkee 1999]
(a) $CH_3(CH_2)_3Br$
(b) $CH_3(CH_2)_5Br$
(c) $CH_3(CH_2)_3CH.Br.CH_3$
(d) $CH_3(CH_2)_2CH.Br.CH_2CH_3$
131. In the following reaction *X* is
 $CH_3NH_2 + X + KOH \rightarrow CH_3NC$ (highly offensive odour) [MP PET 1994]
(a) CH_2Cl_2 (b) $CHCl_3$
(c) CH_3Cl (d) CCl_4
132. Which metal is used in Wurtz synthesis [CPMT 1986; DPMT 1979; MP PET 2002]
(a) *Ba* (b) *Al*
(c) *Na* (d) *Fe*
133. Which of the following is boiled with ethyl chloride to form ethyl alcohol [MNR 1982]
(a) Alcoholic *KOH* (b) Aqueous *KOH*
(c) H_2O (d) H_2O_2
134. Why is chloroform put into dark coloured bottles [MP PET 2002]
(a) To prevent evaporation
(b) To prevent from moisture
(c) To prevent it from oxidation to form phosgene
(d) To prevent its reaction with glass
135. DDT is
(a) A solid (b) A liquid
(c) A gas (d) A solution
136. Bottles containing C_6H_5I and $C_6H_5CH_2I$ lost their original labels. They were labelled *A* and *B* for testing. *A* and *B* were separately taken in test tubes and boiled with *NaOH* solution. The end solution in each tube was made acidic with dilute HNO_3 and then some $AgNO_3$ solution was added. Substance *B* give a yellow precipitate. Which one of the following statements is true for this experiment [AIEEE 2003]
(a) *A* was C_6H_5I
(b) *A* was $C_6H_5CH_2I$
(c) *B* was C_6H_5I
(d) Addition of HNO_3 was unnecessary
137. Which of the following statements is incorrect regarding benzyl chloride [KCET 2003]
(a) It gives white precipitate with alcoholic $AgNO_3$
(b) It is an aromatic compound with substitution in the side chain
(c) It undergoes nucleophilic substitution reaction
(d) It is less reactive than vinyl chloride
- Alkyl halide can be converted into alkene by [BCECE 2005]
(a) Nucleophilic substitution reaction
(b) Elimination reaction
(c) Both nucleophilic substitution and elimination reaction
(d) Rearrangement
139. The major product formed in the following reaction is [AIIMS 2005]
$$CH_3 - \overset{\overset{CH_3}{|}}{C} - CH_2 - Br \xrightarrow[CH_3OH]{CH_3O}$$

(a) $CH_3 - \overset{\overset{CH_3}{|}}{C} - CH_2 - OCH_3$ (b) $CH_3 - \overset{\overset{CH_3}{|}}{C} - CH - CH_2 - CH_3$
 $\quad \quad \quad |$ $\quad \quad \quad |$
 $\quad \quad \quad H$ $\quad \quad \quad OCH_3$
(c) $CH_3 - \overset{\overset{CH_3}{|}}{C} = CH_2$ (d) $CH_3 - \overset{\overset{CH_3}{|}}{C} - CH_3$
 $\quad \quad \quad |$
 $\quad \quad \quad OCH_3$
140. The major product obtained on treatment of $CH_3CH_2CH(F)CH_3$ with CH_3O^- / CH_3OH is [AIIMS 2005]
(a) $CH_3CH_2CH(OCH_3)CH_3$
(b) $CH_3CH = CHCH_3$
(c) $CH_3CH_2CH = CH_2$
(d) $CH_3CH_2CH_2CH_2OCH_3$
141. When phenyl magnesium bromide reacts with *t*-butanol, the product would be [IIT 2005]
(a) Benzene (b) Phenol
(c) *t*-butyl benzene (d) *t*-butyl phenyl ether
142. Alkyl halides react with dialkyl copper reagents to give [AIEEE 2005]
(a) Alkenes (b) Alkyl copper halides
(c) Alkanes (d) Alkenyl halides
143. Which of the following is liquid at room temperature [AFMC 2005]
(a) CH_3I (b) CH_3Br

- (c) C_2H_5Cl (d) CH_3F

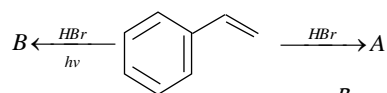
144. Which of the following haloalkanes is most reactive [KCET 2005]

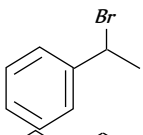
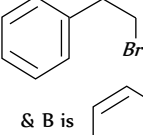
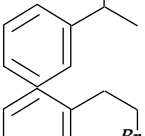
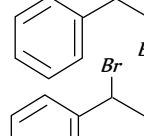
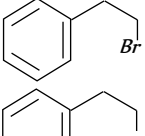
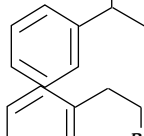
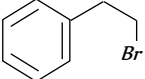
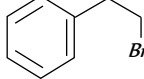
- (a) 1-chloropropane (b) 1-bromopropane
(c) 2-chloropropane (d) 2-bromopropane

145. Grignard reagent adds to [KCET 2005]

- (a) $>C=O$ (b) $-C \equiv N$
(c) $>C=S$ (d) All of the above

146. Analyse the following reaction and identify the nature of A and B [Kerala CET 2005]



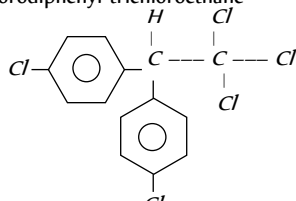
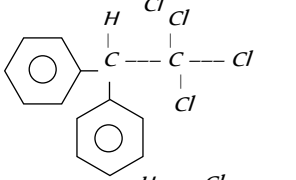
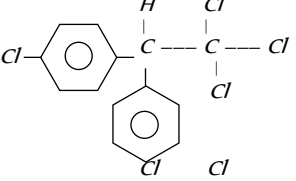
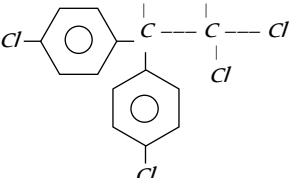
- (a) Both A and B are 
- (b) Both A and B are 
- (c) A is  & B is 
- (d) A is  & B is 
- (e) A is  & B is 

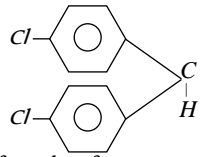
Uses of Halogen Containing Compounds

1. Which of these can be used as moth repellent [CPMT 1987]

- (a) Benzene hexachloride (b) Benzal chloride
(c) Hexachloroethane (d) Tetrachloroethane

2. Which one of the following is the correct formula of dichlorodiphenyl trichloroethane [AIIMS 1982]



- (a) 
- (b) 
- (c) 
- (d) 

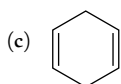
3. The compound $(CH_3)_2C(OH)CCl_3$ is
(a) Chloretone (b) Chloroquin
(c) Chloropicrin (d) Chloropropyl chloride
4. Depletion of ozone layer is caused by [RPMT 2002]
(a) Freon (b) Alkane
(c) Grignard reagent (d) All of these
5. Which of the following is Teflon [RPMT 2002]
(a) $[-CF_2 - CF_2-]_n$ (b) $CF_2 = CF_2$
(c) $CF \equiv CF$ (d) None of these
6. Statement "Ozone in atmosphere is decreased by chloro-fluoro-carbon (Cl_2F_2C)" [RPET 1999]
(a) Is true
(b) Is false
(c) Only in presence of CO_2
(d) Only in absence of CO_2
7. CF_xCl_y [where $x + y = 4$]. These compounds are not used because [RPET 2000]
(a) These are fluoro carbons
(b) These are difficult to synthesise
(c) They deplete ozone layer
(d) None of the these
8. The molecular formula of DDT has [MP PMT 1997]
(a) 5 chlorine atoms (b) 4 chlorine atoms
(c) 3 chlorine atoms (d) 2 chlorine atoms
9. What is the reagent used for testing fluoride ion in water [EAMCET 2003]
(a) Alizarin - S (b) Quinalizarin
(c) Phenolphthalein (d) Benzene
10. Chloropicrin is used as [UPSEAT 2000]
(a) Solvent (b) Anaesthetic
(c) Perfume (d) Tear gas
11. Which is used in the manufacture of plastic
(a) $CH_2 = CHCl$ (b) $CH \equiv CH$
(c) $CH_2 = CH - CH_2I$ (d) CCl_4
12. Freon (dichlorodifluoro methane) is used [CPMT 1986; DPMT 1983; CBSE PMT 2001]
(a) As local anaesthetic
(b) For dissolving impurities in metallurgical process
(c) In refrigerator
(d) In printing industry
13. Which of the following is known as freon which is used as a refrigerant [DPMT 1982; CPMT 1979, 81, 89; AFMC 1995; Manipal MEE 1995; MP PET 1995, 2004]
(a) CCl_2F_2 (b) $CHCl_3$
(c) CH_2F_2 (d) CF_4
14. Benzene hexachloride (BHC) is used as [MP PMT 1994; KCET 1999]
(a) Dye (b) Antimalarial drug
(c) Antibiotic (d) Insecticide
15. Which plastic is obtained from $CHCl_3$ as follows
 $CHCl_3 \xrightarrow[SbF_3]{HF} X \xrightarrow{800^\circ C} Y \xrightarrow{\text{Polymerisation}} \text{Plastic}$
(a) Bakelite (b) Teflon
(c) Polythene (d) Perspex
16. . The above structural formula refers to [MP PET 1997]

- (a) BHC (b) DNA
(c) DDT (d) RNA
17. The commercial uses of DDT and benzene hexachloride are
(a) DDT is a herbicide, benzene hexachloride is a fungicide
(b) Both are insecticides
(c) Both are herbicides
(d) DDT is a fungicide and benzene hexachloride is a herbicide
18. Which of the following is used in fire extinguishers [AFMC 1993]
(a) CH_4 (b) $CHCl_3$
(c) CH_2Cl_2 (d) CCl_4
19. Iodoform can be used as [NCERT 1981]
(a) Anaesthetic (b) Antiseptic
(c) Analgesic (d) Antifebrin
20. Which of the following is an anaesthetic [AFMC 1989]
(a) C_2H_4 (b) $CHCl_3$
(c) CH_3Cl (d) C_2H_5OH
21. An important insecticide is obtained by the action of chloral on chlorobenzene. It is [KCET 1989]
(a) BHC (b) Gammexene
(c) DDT (d) Lindane
22. In fire extinguisher, pyrene is [DPMT 1985]
(a) CO_2 (b) CCl_4
(c) CS_2 (d) $CHCl_3$
23. B.H.C. is used as [Pb. CET 2002]
(a) Insecticide (b) Pesticide
(c) Herbicide (d) Weedicide
24. The use of the product obtained as a result of reaction between acetone and chloroform is [RPMT 1999]
(a) Hypnotic (b) Antiseptic
(c) Germicidal (d) Anaesthetic
25. Use of chlorofluoro carbons is not encouraged because [KCET 2005]
(a) They are harmful to the eyes of people that use it
(b) They damage the refrigerators and air conditioners
(c) They eat away the ozone in the atmosphere
(d) They destroy the oxygen layer
- (c) Benzyl chloride (d) Isopropyl chloride
5. Replacement of Cl of chlorobenzene to give phenol requires drastic conditions but chlorine of 2, 4-dinitrochlorobenzene is readily replaced because [CBSE PMT 1997]
(a) NO_2 make ring electron rich at ortho and para
(b) NO_2 withdraws e^- from meta position
(c) denotes e^- at meta position
(d) NO_2 withdraws e^- from ortho/para positions
6. Among the following one with the highest percentage of chlorine is [MNR 1989]
(a) Chloral (b) Pyrene
(c) PVC (d) Gammexene
7. In which alkyl halide, SN^2 mechanism is favoured maximum [RPMT 1997]
(a) CH_3Cl (b) CH_3CH_2Cl
(c) $(CH_3)_2CHCl$ (d) $(CH_3)_3C-Cl$
8. Which conformation of $C_6H_6Cl_6$ is most powerful insecticide
(a) aaeeee (b) aaeeee
(c) aaaaae (d) aaaaaa
9. The odd decomposition of carbon chlorine bond form [UPSEAT 1999]
(a) Two free ions (b) Two-carbanium ion
(c) Two carbanion (d) A cation and an anion
10. A new carbon-carbon bond formation is possible in [IIT-JEE 1998]
(a) Cannizzaro reaction (b) Friedel-Craft's alkylation
(c) Clemmensen reduction (d) Reimer-Tiemann reaction
11. An isomer of $C_3H_6Cl_2$ on boiling with aqueous KOH gives acetone. Hence, the isomer is [UPSEAT 2000]
(a) 2, 2-dichloropropane (b) 1, 2-dichloropropane
(c) 1, 1-dichloropropane (d) 1, 3-dichloropropane
12. Which of the following is the example of SN^2 reaction [CPMT 1999]
(a) $CH_3Br + OH^- \longrightarrow CH_3OH + Br^-$
(b) $CH_3CH(Br)CH_3 + OH^- \longrightarrow CH_3CH(OH)CH_3 + Br^-$
(c) $CH_3CH_2OH \xrightarrow{-H_2O} CH_2=CH_2$
(d) $CH_3-C(Br)(CH_3)-CH_3 + OH^- \longrightarrow CH_3-C(O)(CH_3)-CH_3 + Br^-$

Critical Thinking

Objective Questions

1. Among the following, the molecule with the highest dipole moment is [IIT-JEE (Screening) 2003]
(a) CH_3Cl (b) CH_2Cl_2
(c) $CHCl_3$ (d) CCl_4
2. When $CHCl_3$ is boiled with $NaOH$, it gives [Orissa JEE 2003]
(a) Formic acid (b) Trihydroxy methane
(c) Acetylene (d) Sodium formate
3. The hybridization state of carbon atoms in the product formed by the reaction of ethyl chloride with aqueous potassium hydroxide is [EAMCET 1997]
(a) sp (b) sp^2
(c) sp^3 (d) sp^3d
4. Which of the following compounds does not undergo nucleophilic substitution reactions [KCET 1998]
(a) Vinyl chloride (b) Ethyl bromide
13. Wurtz reaction of methyl iodide yields an organic compound X. Which one of the following reactions also yields X [EAMCET 2003]
(a) $C_2H_5Cl + Mg \xrightarrow{\text{dry ether}} \longrightarrow$
(b) $C_2H_5Cl + LiAlH_4 \longrightarrow$
(c) $C_2H_5Cl + C_2H_5ONa \longrightarrow$
(d) $CHCl_3 \xrightarrow[\Delta]{Ag \text{ powder}} \longrightarrow$
14. Ethyl orthoformate is formed by heating with sodium ethoxide [EAMCET 2003]
(a) $CHCl_3$ (b) C_2H_5OH
(c) $HCOOH$ (d) CH_3CHO
15. 1, 2 di-bromo cyclohexane on dehydro halogenation gives [UPSEAT 2003]
(a)  (b) 



(d) None of these

16. In which one of the following conversions phosphorus pentachloride is used as a reagent [EAMCET 1997]

- (a) $H_2C = CH_2 \rightarrow CH_3CH_2Cl$
 (b) $H_3C - O - CH_3 \rightarrow CH_3Cl$
 (c) $CH_3CH_2OH \rightarrow CH_3CH_2Cl$
 (d) $HC \equiv CH \rightarrow CH_2 = CHCl$

17. When but-3-en-2-ol reacts with aq. HBr, the product formed is [DCE 2001]

- (a) 3-bromobut-1-ene
 (b) 1-bromobut-2-ene
 (c) A mixture of both a and b
 (d) 2-bromobut-2-ene

18. Which of these do not form Grignard reagent

- (a) CH_3F (b) CH_3Cl
 (c) CH_3Br (d) CH_3I

19. An organic compound $A(C_4H_6Cl)$ on reaction with Na/diethyl ether gives a hydrocarbon, which on monochlorination gives only one chloro derivative. A is [Kerala PMT 2004]

- (a) *t*-butyl chloride (b) *s*-butyl chloride
 (c) Isobutyl chloride (d) *n*-butyl chloride
 (e) None of these

20. Among the following the most reactive towards alcoholic KOH is [AIIMS 2004]

- (a) $CH_2 = CHBr$ (b) $CH_3COCH_2CH_2Br$
 (c) CH_3CH_2Br (d) $CH_3CH_2CH_2Br$

21. Which one of the following possess highest m.pt.

[Pb. CET 2004]

- (a) Chlorobenzene (b) *o*-dichlorobenzene
 (c) *m*-dichlorobenzene (d) *p*-dichlorobenzene

22. Which chlorine atom is more electronegative in the following [UPSEAT 2004]

- (a) $CH_3 - Cl$ (b) $CH_3 - CH_2 - Cl$
 (c) $H - \overset{\overset{CH_3}{|}}{C} - Cl$ (d) $CH_3 - CH_2 - \overset{\overset{CH_3}{|}}{C} - Cl$
 (e) $CH_3 - \overset{\overset{CH_3}{|}}{C} - Cl$

23. What would be the product formed when 1-Bromo-3-chloro cyclobutane reacts with two equivalents of metallic sodium in ether [IIT-JEE (Screening) 2005]

- (a) (b)
 (c) (d)

1. Assertion : $CHCl_3$ is stored in transparent bottles.
 Reason : $CHCl_3$ is oxidised in dark. [AIIMS 1996]
 2. Assertion : Addition of bromine to trans-2-butene yields meso-2,3-dibromobutane
 Reason : Bromine addition to an alkene is an electrophilic addition. [IIT-JEE (Screening) 2001]
 3. Assertion : Alkyl halides are soluble in organic solvents.
 Reason : *p*-dichlorobenzene possesses low melting point.
 4. Assertion : CCl_4 is not a fire extinguisher.
 Reason : CCl_4 is insoluble in water.
 5. Assertion : Aqueous hydrohalogen acids are used to prepare alkyl halides from alkenes.
 Reason : Hydrogen iodide readily reacts with alkenes to form alkyl halides.
 6. Assertion : Alkyl halides form alkenes when heated above $300^\circ C$.
 Reason : CH_3CH_2I react slowly with strong base when compared to CD_3CH_2I .
 7. Assertion : Halogen acids react with alcohols to form haloalkanes.
 Reason : Order of reactivity of halogen acids $HCl > HBr > HI$

8. Assertion : is less reactive than towards reactions.

Reason : Tertiary alkyl halides react predominantly by S_N1 mechanism.

9. Assertion : Electron withdrawing groups in aryl halides decrease the reactivity towards nucleophilic substitution.

Reason : 2,4-Dinitrochlorobenzene is less reactive than chlorobenzene.

10. Assertion : Aryl halides undergo electrophilic substitutions more readily than benzene.

Reason : Aryl halide gives a mixture of *o*- and *p*- products.

11. Assertion : Addition of Br_2 to cis-but-2-ene is stereoselective.

Reason : S_N2 reactions are stereospecific as well as stereoselective.

12. Assertion : Optically active 2-iodobutane on treatment with NaI in acetone undergoes racemization.

Reason : Repeated Walden inversions on the reactant and its product eventually gives a racemic mixture.

13. Assertion : Nucleophilic substitution reaction on an optically active alkyl halide gives a mixture of enantiomers.

Reason : The reaction occurs by S_N1 mechanism.

Assertion & Reason

For AIIMS Aspirants

Read the assertion and reason carefully to mark the correct option out of the options given below:

- (a) If both assertion and reason are true and the reason is the correct explanation of the assertion.
 (b) If both assertion and reason are true but reason is not the correct explanation of the assertion.
 (c) If assertion is true but reason is false.
 (d) If the assertion and reason both are false.
 (e) If assertion is false but reason is true.

Answers

Introduction of Halogen containing compounds

1	a	2	b	3	b	4	c	5	b
6	a	7	b	8	a	9	b	10	a
11	d	12	a	13	b				

Preparation of Halogen containing compounds

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

1	c	2	a	3	a	4	a	5	a
6	a	7	c	8	a	9	a	10	d
11	a	12	c	13	a	14	d	15	b
16	c	17	b	18	d	19	b	20	b
21	c	22	b	23	a	24	a	25	c

Properties of Halogen containing compounds

1	a	2	c	3	c	4	c	5	c
6	c	7	c	8	c	9	b	10	d
11	b	12	c	13	a	14	a	15	d
16	b	17	c	18	b	19	b	20	d
21	d	22	c	23	b	24	a	25	b
26	c	27	d	28	b	29	a	30	b
31	c	32	c	33	b	34	a	35	a
36	a	37	a	38	a	39	a	40	a
41	a	42	c	43	b	44	c	45	d
46	c	47	b	48	ab	49	b	50	b
51	a	52	a	53	b	54	b	55	a
56	d	57	a	58	b	59	b	60	b
61	c,d	62	c	63	c	64	c	65	b
66	c	67	c	68	a	69	d	70	b
71	a	72	d	73	d	74	a	75	b
76	b,d	77	d	78	c	79	a	80	d
81	b	82	b	83	c	84	a	85	b
86	cd	87	b	88	c	89	a	90	a
91	d	92	b	93	b	94	c	95	d
96	d	97	a	98	b	99	c	100	a
101	a	102	b	103	d	104	a	105	b
106	d	107	a	108	b	109	c	110	a
111	a	112	c	113	a	114	c	115	b
116	a	117	b	118	b	119	a	120	d
121	b	122	a	123	b	124	a	125	c
126	c	127	d	128	a	129	d	130	d
131	b	132	c	133	b	134	c	135	a
136	a	137	d	138	b	139	d	140	b
141	a	142	c	143	a	144	d	145	d
146	c								

Uses of Halogen containing compounds