


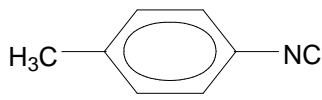
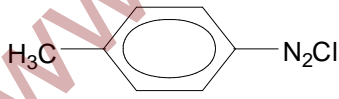
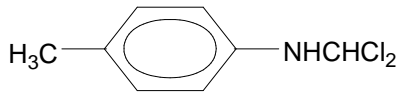
## Halo Alkanes and Haloarenes

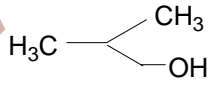
### Sub Topic-I: Preparation and Properties of Alkyl Halides

- The poisonous gas obtained by exposing chloroform to air and sunlight is**  
1)  $\text{CH}_2\text{Cl}_2$                       2)  $\text{CoCl}_2$                       3)  $\text{CH}_2\text{O}$                       4)  $\text{CH}_3\text{Cl}$
- $\text{CH}_3\text{OH} \xrightarrow{\text{PI}_3} (\text{A}) \xrightarrow{\text{KCN}} (\text{B}) \xrightarrow{\text{Hydrolysis}} (\text{C})$ . The compound (C) is**  
1)  $\text{CH}_3\text{OH}$                       2)  $\text{HCOOH}$                       3)  $\text{CH}_3\text{CHO}$                       4)  $\text{CH}_3\text{COOH}$
- $\text{CH}_3\text{Cl} \xrightarrow{\text{KCN}} (\text{A}) \xrightarrow{\text{H}^+/\text{H}_2\text{O}} (\text{B})$**   
1)  $\text{CH}_3\text{NH}_2$                       2)  $\text{HCOOH}$   
3)  $\text{CH}_3\text{COOH}$                       4)  $\text{CH}_3\text{COCH}_3$
- A sample of chloroform before using as an anaesthetic, is tested by**  
1) Fehling's solution  
2) Ammoniacal cuprous chloride  
3) Ammoniacal silver nitrate solution  
4) Silver nitrate solution after boiling with alcoholic KOH
- Which one of the following statements is wrong?**  
1) Lower alkyl halides are either colourless gases or volatile liquids  
2) Alkyl halides are highly soluble in water  
3) Alkyl halides burn easily with green edged flame  
4) The higher alkyl halides are colourless solids
- Which will be obtained by boiling  $\text{CH}_2\text{Cl}_2$  with caustic soda?**  
1) Sodium oxalate    2) Sodium acetate    3) Sodium formate    4) Ethyl alcohol
- Which one of the following statement is wrong?**  
1) Iodoform is used as an antiseptic  
2) Chloroform can be used as an anaesthetic  
3) Chloropicrin is used as an insecticide  
4) Chloretone is used as an antiseptic

8. **Decreasing order of reactivity of alkyl halide is**  
1)  $RI > RCl > RBr$  2)  $RBr > RCl > RI$  3)  $RI > RBr > RCl$  4)  $RCl > RBr > RI$
9. **A mixture of 1-chlorobutane and 2-chlorobutane when treated with alcoholic KOH, gives**  
1) 1-butene 2) 2-butene  
3) Isobutylene 4) A mixture of 1-butene and 2-butene
10. **Which of the following processes does not occur during formation of  $CHCl_3$  from ethyl alcohol and bleaching powder?**  
1) Oxidation 2) Chlorination 3) Hydrolysis 4) Reduction
11. **For the reaction,  $C_2H_5OH + HX \xrightarrow{ZnX_2} C_2H_5X$**   
The decreasing order of reactivity of halogen acids is :  
1)  $HI > HCl > HBr$  2)  $HI > HBr > HCl$  3)  $HCl > HBr > HI$  4)  $HBr > HI > HCl$
12.  **$(CH_3)_2CHCl + NaI \rightarrow (CH_3)_2CHI + NaCl$ . The above reaction is known as**  
1) Finkelstein reaction 2) Stephens reaction  
3) Kolbe's reaction 4) Wurtz reaction
13. **Ethyl orthoformate is formed by heating \_\_\_\_\_ with sodium ethoxide**  
1)  $HCOOH$  2)  $C_2H_5OH$  3)  $CHCl_3$  4)  $CH_3CHO$
14. **Pure chloroform may be prepared by**  
1) Chlorination of Methane  
2) Partial reduction of  $CCl_4$   
3) The action of Bleaching Powder and Alkali on Ethanol  
4) Distilling Chloral Hydrate with conc. aqueous Alkali solution
15. **Which is detected by carbylamine test?**  
1)  $H_2NCONH_2$  2)  $CH_3CONH_2$  3)  $C_2H_5NH_2$  4) All of these
16. **In which of the following compounds, carbon exhibits a valency of 4 but oxidation state-2?**  
1)  $HCHO$  2)  $CH_3Cl$  3)  $CH_2Cl_2$  4)  $CHCl_3$

17. The antiseptic action of  $\text{CHI}_3$  is due to
- 1) Iodoform itself
  - 2) Liberation of free iodine
  - 3) Partially due to iodine and partially due to  $\text{CHI}_3$  itself
  - 4) None of the above
18. The reaction conditions leading to the best yield of  $\text{C}_2\text{H}_5\text{Cl}$  are
- 1)  $\text{C}_2\text{H}_6(\text{excess}) + \text{Cl}_2 \xrightarrow{\text{UV light}}$
  - 2)  $\text{C}_2\text{H}_6 + \text{Cl}_2 \xrightarrow{\text{Dark, Room temp.}}$
  - 3)  $\text{C}_2\text{H}_6 + \text{Cl}_2(\text{excess}) \xrightarrow{\text{UV light}}$
  - 4)  $\text{C}_2\text{H}_6 + \text{Cl}_2 \xrightarrow{\text{UV light}}$
19. Which one of the following has antiseptic property?
- 1) Dichloromethane
  - 2) Tri iodomethane
  - 3) Trifluoromethane
  - 4) Tetrachloromethane
20. 1-Bromopropane and 2-bromopropane on treatment with sodium in presence of ether gives
- 1) n-hexane
  - 2) 2, 3-dimethyl butane
  - 3) 2-methyl pentane
  - 4) A mixture of all these different alkanes
21. Chloroform on treatment with phenol in presence of caustic alkali forms salicylaldehyde. This reaction is known as :
- 1) Carbylamine reaction
  - 2) Cannizzaro's reaction
  - 3) Wurtz – Fittig reaction
  - 4) Reimer – Tiemann reaction
22.  $\text{CCl}_3\text{CHO} \xrightarrow{\text{NaOH}} (\text{A}) \xrightarrow[\text{Sunlight}]{+\text{Cl}_2} (\text{B})$ . The product (B) can be used as A
- 1) Fire extinguisher
  - 2) Solvent
  - 3) Insecticide
  - 4) All of these
23.  $\text{CH}_3\text{C} \equiv \text{CH} \xrightarrow[\text{(HgSO}_4\text{)}]{\text{Dil. H}_2\text{SO}_4} (\text{B}) \xrightarrow[\text{(NaOH)}]{\text{CHCl}_3} (\text{C})$  Compound (C) can be used as
- 1) An anesthetic
  - 2) An insecticide
  - 3) A solvent
  - 4) A hypnotic
24. Isobutyl magnesium bromide with dry ether and absolute alcohol gives
- 1)  $(\text{CH}_3)_2\text{CHCH}_2\text{OH}$  and  $\text{CH}_3\text{CH}_2\text{MgBr}$
  - 2)  $(\text{CH}_3)_2\text{CHCH}_2\text{CH}_2\text{CH}_3$  and  $\text{Mg(OH)Br}$
  - 3)  $(\text{CH}_3)_3\text{CH}$  and  $\text{CH}_3\text{CH}_2\text{OMgBr}$
  - 4)  $(\text{CH}_3)_3\text{CH}$ ,  $\text{H}_2\text{C} = \text{CH}_2$  and  $\text{Mg(OH)Br}$

25. Which of the following will give a yellow precipitate with  $I_2/NaOH$ ?
- 1)  $HCHO$
  - 2)  $CH_3COOCOCH_3$
  - 3)  $CH_3CONH_2$
  - 4)  $CH_3CH(OH)CH_2CH_3$
26. The number of isomers for the compound with molecular formula  $C_2BrClFI$  is
- 1) 3
  - 2) 4
  - 3) 5
  - 4) 6
27. Match List I (compound) with List II (Use) and select the correct answer using the codes given below in the lists
- | List – I (Compound)      | List – II (Use)      |
|--------------------------|----------------------|
| I) Acetyl salicylic acid | A) Insecticide       |
| II) DDT                  | B) Drug              |
| III) Naphthalene         | C) Moth repellent    |
| IV) Carbon tetrachloride | D) Fire extinguisher |
|                          | E) Refrigerant       |
- 1) I-B, II-A, III-C, IV-D
  - 2) I-E, II-C, III-D, IV-A
  - 3) I-B, II-C, III-D, IV-A
  - 4) I-E, II-A, III-C, IV-D
28. Among the following the molecule with highest dipole moment is
- 1)  $CH_3Cl$
  - 2)  $CH_2Cl_2$
  - 3)  $CHCl_3$
  - 4)  $CCl_4$
29. The reaction of chloroform with alcoholic KOH and P-toluidine forms
- 1) 
  - 2) 
  - 3) 
  - 4) 
30. Which one of the following will not form a yellow precipitate on heating with an alkaline solution of iodine?
- 1)  $CH_3CH(OH)CH_3$
  - 2)  $CH_3CH_2CH(OH)CH_3$
  - 3)  $CH_3OH$
  - 4)  $CH_3CH_2OH$

31. **Debromination of meso dibromobutane will give the product as**  
 1) n-butane                      2) 2-butyne                      3) cis-2-butene                      4) trans-2-butene
32. **Alkyl halides react with dialkyl copper reagents to give**  
 1) Alkenes                      2) Alkyl Copper Halides                      3) Alkanes                      4) Alkenyl Halides
33. **Tertiary alkyl halides are practically inert to substitution by  $S_N2$  mechanism because of**  
 1) Insolubility                      2) Instability                      3) Inductive Effect                      4) Steric Hindrance
34. **The major product obtained on treatment of  $CH_3CH_2CH(F)CH_3$  with  $CH_3O^- / CH_3OH$  is**  
 1)  $CH_3CH_2CH(OCH_3)CH_3$                       2)  $CH_3CH = CHCH_3$   
 3)  $CH_3CH_2CH = CH_2$                       4)  $CH_3CH_2CH_2CH_2OCH_3$
35. **Which among the following is a catalyst for the preparation of Grignard reagent?**  
 1) Iodine powder                      2) Iron powder  
 3) Activated charcoal                      4) Manganese dioxide
36.  $CH_3Br + Nu^- \rightarrow CH_3 - NU + Br^-$   
**The decreasing order of the rate of the above reaction with nucleophile ( $Nu^-$ ) A to D is**  
 $[Nu^- = (A) PhO^-, (B) ACO^-, (C) HO^-, (D) CH_3O^-]$   
 1)  $D > C > A > B$                       2)  $D > C > B > A$                       3)  $A > B > C > D$                       4)  $B > D > C > A$
37. **Among the following the one that gives positive iodoform test upon reaction with  $I_2$  and NaOH is**  
 1)  $CH_3CH_2CH(OH)CH_2CH_3$                       2)  $C_6H_5CH_2CH_2OH$   
 3)                       4)  $PhCHOHCH_3$
38. **Which of the following compounds has the highest boiling point?**  
 1)  $CH_3CH_2CH_2Cl$                       2)  $CH_3CH_2CH_2CH_2Cl$   
 3)  $CH_3CH(CH_3)CH_2Cl$                       4)  $(CH_3)_3C - Cl$

39. Which can undergo haloform reaction?

- 1)  $(\text{CH}_3)_3\text{C-OH}$     2)  $(\text{C}_2\text{H}_5)_2\text{C=O}$     3) Acetophenone    4) Benzophenone

40. Feron used as refrigerant is

- 1)  $\text{F}_2\text{C=CF}_2$     2)  $\text{CH}_2\text{F}_2$     3)  $\text{CCl}_2\text{F}_2$     4)  $\text{CF}_4$

41. Maximum number of molecules of  $\text{CH}_3\text{I}$  that can react with a molecule of  $\text{CH}_3\text{NH}_2$  is

- 1) 3    2) 4    3) 2    4) 1

42.  $\text{HC}\equiv\text{CH} \xrightarrow[\text{H}_2\text{SO}_4]{\text{HgSO}_4} \xrightarrow[\text{HOH}]{\text{CH}_3\text{MgBr}} \xrightarrow{\text{P/Br}_2} (\text{X})$  ; (X) is

- 1)  $\text{CH}_3\text{CH}(\text{Br})\text{CH}_3$     2)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{Br}$   
3)  $\text{H}_2\text{C=CH-Br}$     4)  $\text{BrCH=CH-CH}_3$

43. Match List I with List II and pick the correct matching form the codes given below

List I (Haloalkane / arene)

List - II

- |                            |                            |
|----------------------------|----------------------------|
| A) Iodoform                | 1) $\text{CF}_4$           |
| B) BHC                     | 2) Antiseptic              |
| C) Freon – 14              | 3) Moth repellent          |
| D) Halothanes              | 4) Inhalation anaesthetic  |
| E) P-Dichlorobenzene       | 5) Termite pesticide       |
| 1) A-2, B-4, C-5, D-3, E-1 | 2) A-2, B-5, C-1, D-4, E-3 |
| 3) A-3, B-4, C-2, D-1, E-5 | 4) A-1, B-3, C-5, D-2, E-4 |

44. In the reaction,  $\text{RX} \xrightarrow{\text{Alc.KCN}} (\text{A}) \xrightarrow{\text{Dil.HCl}} (\text{B})$  : the product (B) is

- 1) Alkyl Chloride    2) Aldehyde    3) Carboxylic Acid    4) Ketone

45. Which of the following haloalkanes is most reactive?

- 1) 1-chloropropane    2) 1-bromopropane    3) 2-chloropropane    4) 2-bromopropane

46. In the chemical reaction,  $\text{CH}_3\text{CH}_2\text{NH}_2 + \text{CHCl}_3 + 3\text{KOH} \rightarrow (\text{A}) + (\text{B}) + 3\text{H}_2\text{O}$  the compounds (A) and (B) are respectively

- 1)  $\text{C}_2\text{H}_5\text{NC}$  and  $3\text{KCl}$     2)  $\text{C}_2\text{H}_5\text{CN}$  and  $3\text{KCl}$   
3)  $\text{CH}_3\text{CH}_2\text{CONH}_2$  and  $3\text{KCl}$     4)  $\text{C}_2\text{H}_5\text{NC}$  and  $\text{K}_2\text{CO}_3$



48. Ethyl chloride on reduction with  $\text{LiAlH}_4$  gives compound 'X' as an important product. 'X' on chlorination with one mole of  $\text{Cl}_2$  in the presence of light at ordinary temperature gives 'Y'. What is 'Y' ?

49. Which of the following on heating with aqueous KOH produces acetaldehyde?

- 50. Which one of the following does not undergo iodoform reaction?**

51. On monochlorination of 2-methyl butane, the total number of chiral compounds is

- 52. Which of the following will have a meso isomer also?**

53. The compound added to prevent chloroform to form phosgene gas (Poisonous gas) is

- 54. Among the halogens, the one which is oxidized by nitric acid is**

- 1) Iodine                  2) Chlorine                  3) Bromine                  4) Fluorine

55. On treating a mixture of two alkyl halides with sodium metal in dry ether, 2-methyl propane was obtained. The alkyl halides are

- 1) 1-chloropropane and chloroethane
- 2) 2-chloropropane and chloroethane
- 3) 2-chloropropane and chloromethane
- 4) 1-chloropropane and chloromethane

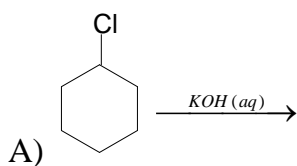
56. Match the following Column I and Column II.

**Column I**

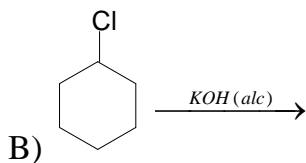
(Reaction)

**Column II**

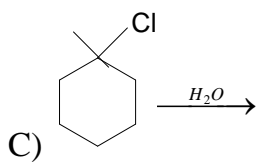
(Type of reaction)



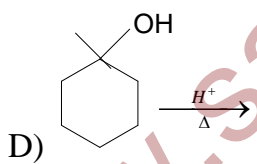
p)  $S_N1$



q)  $S_N2$



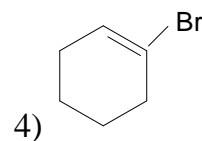
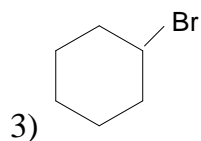
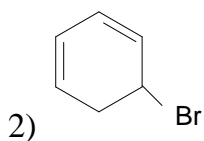
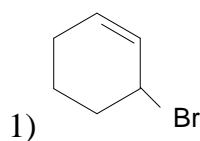
r)  $E_1$



s)  $E_2$

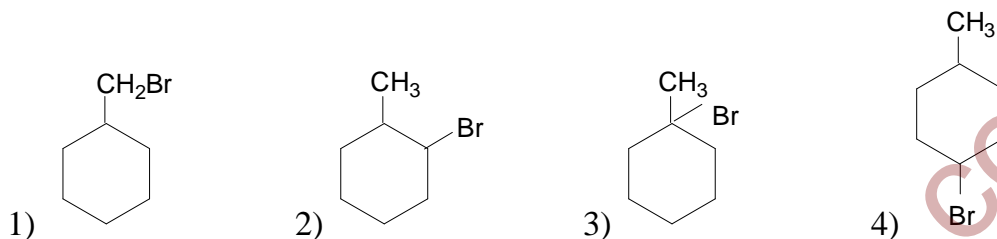
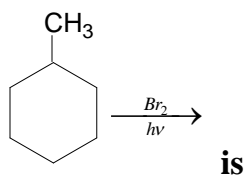
	A	B	C	D		A	B	C	D
1)	p	q	r	s	2)	q	s	p	r
3)	p	r	q	s	4)	s	q	r	p

57. Which of the following is fast debrominated?

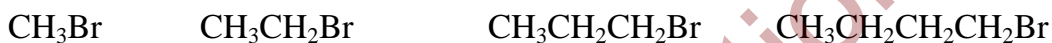




58. The major product obtained in the reaction



59. Arrange the following compounds in the decreasing order of the boiling point



I

II

III

IV

1)  $\text{I} > \text{II} > \text{III} > \text{IV}$     2)  $\text{IV} > \text{III} > \text{II} > \text{I}$     3)  $\text{I} > \text{III} > \text{II} > \text{IV}$     4)  $\text{III} > \text{IV} > \text{I} > \text{II}$

60.  $\text{CCl}_4$  is used as fire extinguisher because

- 1) Of its covalent bond
- 2) Of its low boiling point
- 3) Of its high melting point
- 4) It gives incombustible vapours

61. Match List I with List II and select the correct answer using the codes given below the lists.

**List – I (compound)**

- A) Chloreton
- B) Chloropicrin
- C) Lindane
- D) Teflon

**List – II (Use)**

- i) Monomer
- ii) In war and as insecticide
- iii) Insecticide
- iv) Hypnotic

Codes

	A	B	C	D
1)	iii	i	iv	ii
2)	i	ii	iii	iv
3)	iv	iii	ii	i
4)	ii	iv	i	iii

62. Match List I with List II and select the correct answer using the codes given below the lists.

**List I (Compound)**

**List II (Action)**

A) Teflon

i) Ozone layer depletion

B) Pyrene

ii) Non-bio degradable insecticide

C) DDT

iii) Non-stick cook-ware and insulator

D) Freon

iv) Fire extinguisher

**Codes**

	A	B	C	D
1)	i	ii	iii	iv
2)	iv	iii	i	ii
3)	iii	iv	ii	i
4)	ii	i	iv	iii

63. The intermediate compound formed in Frankland's reaction is

1)  $RZnI_2$

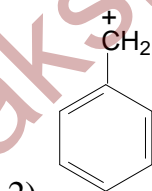
2)  $R_2Zn$

3)  $RZnI$

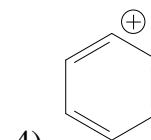
4)  $R_2ZnI$

64. Which is the most stable carbocation formed as intermediate in nucleophilic substitution reaction?

1)  $CH_2 = \overset{+}{C}H$



3)  $(CH_3)_3\overset{+}{C}$



**KEY**

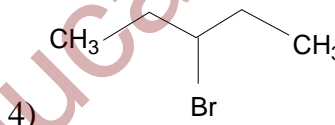
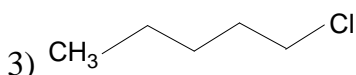
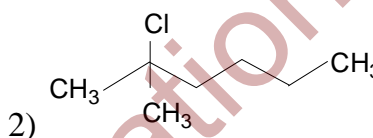
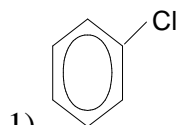
- 1) 2   2) 4   3) 3   4) 3   5) 2   6) 3   7) 4   8) 3   9) 4   10) 4  
11) 2   12) 1   13) 1   14) 4   15) 3   16) 2   17) 2   18) 1   19) 2   20) 4  
21) 4   22) 4   23) 4   24) 3   25) 4   26) 4   27) 1   28) 1   29) 2   30) 3  
31) 3   32) 3   33) 4   34) 2   35) 1   36) 1   37) 4   38) 2   39) 3   40) 3  
41) 1   42) 1   43) 2   44) 3   45) 4   46) 1   47) 1   48) 2   49) 4   50) 3  
51) 2   52) 2   53) 4   54) 1   55) 3   56) 2   57) 2   58) 3   59) 2   60) 4  
61) 3   62) 3   63) 3   64) 2

**Sub Topic – II: Nucleophilic Substitution Reaction**

1.  **$\text{CH}_3 - \text{CH}_2 - \text{Br}$  on treatment with  $\text{LiAlH}_4$  gives ethane gas while  $(\text{CH}_3)_3\text{C} - \text{Br}$  on same treatment gives  $\text{H}_2$  gas because**

- 1) The former is  $\text{S}_{\text{N}}2$  and later is  $\text{E}_2$  reaction
- 2) The former is  $\text{E}_2$  and later is  $\text{S}_{\text{N}}2$  reaction
- 3) The former is  $\text{S}_{\text{N}}1$  and later is  $\text{E}_2$  reaction
- 4) The former is  $\text{E}_2$  and later is  $\text{S}_{\text{N}}2$  reaction

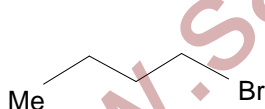
2. **Which of the following shows  $\text{S}_{\text{N}}1$  reaction most readily?**



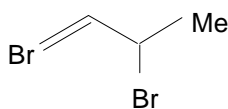
3. **Which of the following is most reactive towards nucleophilic substitution reaction?**

- 1)  $\text{CH}_2 = \text{CH} - \text{Cl}$
- 2)  $\text{C}_6\text{H}_5\text{Cl}$
- 3)  $\text{CH}_3\text{CH} = \text{CHCl}$
- 4)  $\text{ClCH}_2 - \text{CH} = \text{CH}_2$

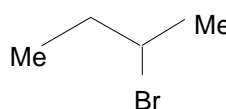
4. **Consider the following bromides**



(A)



(B)

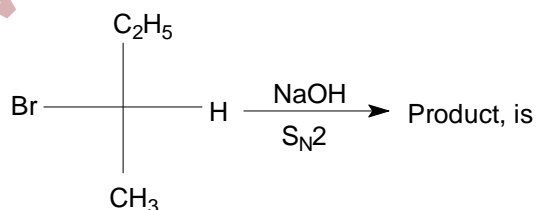


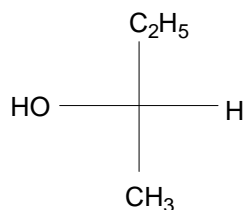
(C)

**The correct order of  $\text{S}_{\text{N}}1$  reactivity is**

- 1)  $\text{B} > \text{A} > \text{C}$
  - 2)  $\text{C} > \text{B} > \text{A}$
  - 3)  $\text{A} > \text{B} > \text{C}$
  - 4)  $\text{B} > \text{C} > \text{A}$
5. **An  $\text{S}_{\text{N}}2$  reaction at an asymmetric carbon of a compound always gives**
- 1) An enantiomer of the substrate
  - 2) A product with opposite optical rotation
  - 3) A mixture of diastereomers

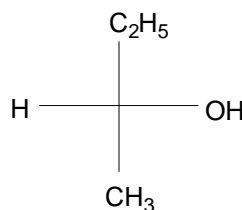
- 4) A single stereoisomer
6. The organic chloro compound, which shows complete stereo chemical inversion during a  $S_N2$  reaction, is
- 1)  $CH_3Cl$                       2)  $(C_2H_5)_2CHCl$       3)  $(CH_3)_3CCl$                       4)  $(CH_3)_2CHCl$
7. Which of the following is the correct order of decreasing  $S_N2$  reactivity?
- 1)  $RCH_2X > R_2CHX > R_3CX$     2)  $R_3CX > R_2CHX > RCH_2X$   
 3)  $R_2CHX > R_3CX > RCH_2X$     4)  $RCH_2X > R_3CX > R_2CHX$
8.  $CH_3Br + Nu^- \rightarrow CH_3 - Nu + Br^-$ . The decreasing order of the rate of the above reaction with nucleophiles ( $Nu^-$ ) A to D is  
 [ $Nu^- =$  (A)  $PHO^-$ , (B)  $AcO^-$ , (C)  $HO^-$ , (D)  $CH_3O^-$ ]
- 1)  $D > C > A > B$       2)  $D > C > B > A$       3)  $A > B > C > D$       4)  $B > D > C > A$
9. Tertiary alkyl halides are practically inert to substitution by  $S_N2$  mechanism because of
- 1) Insolubility                      2) Instability                      3) Inductive Effect      4) Steric Hindrance
10. The decreasing order of reactivity of
- I) Benzyl chloride  
 II) p-nitro benzyl chloride and  
 III) p-methoxybenzyl chloride towards  $S_N1$  reaction is
- 1)  $I > II > III$                       2)  $II > III > I$                       3)  $III > II > I$                       4)  $III > I > II$
11. The main organic product of the reaction of neopentyl bromide with aqueous NaOH is
- 1) Neopentyl alcohol    2) Isobutyl alcohol  
 3) 3-Methylbutan-2-ol    4) 2-Methylbutan-2-ol
12. The product in the reaction





1)

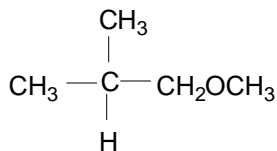
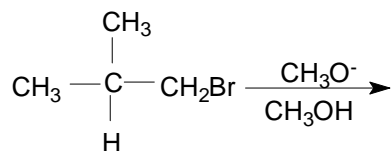
3) Both



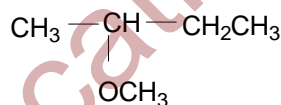
2)

4) None

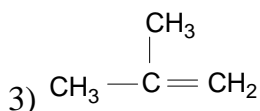
13. The major product formed in the following reaction is



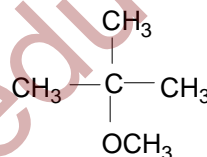
1)



2)



3)



4)

14. Which of the following is the correct order of decreasing reactivity towards nucleophilic substitution?

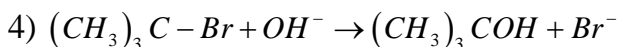
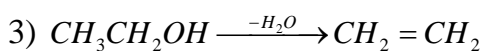
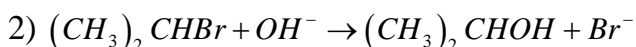
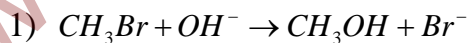
1) Vinyl chloride > Allyl chloride > Propyl chloride

2) Propyl chloride > Vinyl chloride > Allyl chloride

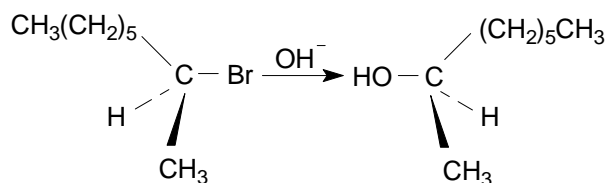
3) Allyl chloride > Vinyl chloride > Propyl chloride

4) Allyl chloride > Propyl chloride > Vinyl chloride

15. Which of the following is an example of S<sub>N</sub>2 reaction?



16. The reaction given below is



- 1) S<sub>E</sub>2                      2) S<sub>N</sub>1                      3) S<sub>N</sub>2                      4) S<sub>N</sub>0

17. Backside displacement is observed in all S<sub>N</sub>2 reactions because

- 1) Nucleophiles are electronically attracted by the leaving group
- 2) Nucleophiles are electronically repelled by the leaving group
- 3) S<sub>N</sub>2 reactions always takes place through two steps
- 4) Attack on a carbocation intermediate is favoured on the opposite side from which the leaving group departs

18. S<sub>N</sub>2 mechanism proceeds through the involvement of

- 1) Carbocation      2) Transition State      3) Free Radical      4) Inductive Effect

19. Which of the following undergoes nucleophilic substitution exclusively by S<sub>N</sub>1 mechanism?

- 1) Ethyl Chloride                      2) Isopropyl Chloride
- 3) Chlorobenzene                      4) Benzyl Chloride

20. S<sub>N</sub>2 reactions are

- 1) Stereo selective but not stereo specific
- 2) Stereo selective as well as stereo specific
- 3) Stereo specific but not stereo selective
- 4) Neither Stereo selective nor stereo specific

21. The order of reactivities of the following alkyl halides for a S<sub>N</sub>2 reaction is

- 1) RF > RCl > RBr > RI                      2) RF > RBr > RCl > RI
- 3) RCl > RBr > RF > RI                      4) RI > RBr > RCl > RF

22. Which of the following nucleophiles favours S<sub>N</sub>2 mechanism?

- 1) : $\bar{\text{O}}\text{H}$                       2)  $\text{H}_2\ddot{\text{O}}$                       3)  $\ddot{\text{N}}\text{H}_3$                       4) : $\bar{\text{O}}\text{R}$

23. Which of the following factors does not favour  $S_N1$  mechanism?

- |                                     |                           |
|-------------------------------------|---------------------------|
| 1) Strong nucleophile               | 2) Polar solvent          |
| 3) Low concentration of nucleophile | 4) $3^\circ$ alkyl halide |

24. Isopropyl chloride undergoes hydrolysis by

- |                                 |                     |
|---------------------------------|---------------------|
| 1) $S_N1$ mechanism             | 2) $S_N2$ mechanism |
| 3) $S_N1$ and $S_N2$ mechanisms | 4) $E_1$ mechanism  |

25. Consider the following haloalkanes

A)  $CH_3F$     B)  $CH_3Cl$     C)  $CH_3Br$     D)  $CH_3I$

The increasing order of reactivity in nucleophilic substitution reaction is

- 1)  $A < B < D < C$     2)  $A < B < C < D$     3)  $A < C < B < D$     4)  $D < C < B < A$

Key

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



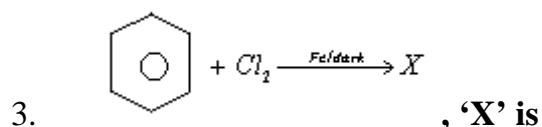
### Sub Topic – III: Chloro Benzene

**1. Chlorobenzene is**

- |                                     |  |
|-------------------------------------|--|
| 1) More reactive than ethyl bromide | 2) More reactive than isopropyl chloride |
| 3) As reactive as methyl chloride   | 4) Less reactive than benzyl chloride    |

**2. Chlorobenzene is prepared commercially by**

- |                    |                     |
|--------------------|---------------------|
| 1) Dow's process   | 2) Deacon's process |
| 3) Raschig process | 4) Etard's process  |



- |                                |                    |
|--------------------------------|--------------------|
| 1) Dichloro benzene            | 2) Benzyl chloride |
| 3) 1, 3, 5 - trichloro benzene | 4) Chlorobenzene   |

**4. During chlorination of benzene using Cl<sub>2</sub> in the presence of FeCl<sub>3</sub> the attacking species is**

- |                    |                    |                    |                                   |
|--------------------|--------------------|--------------------|-----------------------------------|
| 1) Cl <sup>-</sup> | 2) Cl <sup>+</sup> | 3) Cl <sub>2</sub> | 4) FeCl <sub>4</sub> <sup>-</sup> |
|--------------------|--------------------|--------------------|-----------------------------------|

**5. Direct iodination of benzene is not possible because**

- |                              |  |
|------------------------------|--|
| 1) Iodine is oxidising agent | 2) The product C <sub>6</sub> H <sub>5</sub> I is reduced to by C <sub>6</sub> H <sub>6</sub> HI |
| 3) HI is unstable            | 4) Ring is deactivated   |

**6. The following is an example of Sandmeyer reaction**

- |  |   |
|--|---|
| 1) $C_6H_5N_2^+Cl^- \xrightarrow{CuCl} C_6H_5Cl$     | 2) $C_6H_5N_2^+Cl^- \xrightarrow{H_2O/\Delta} C_6H_5OH$ |
| 3) $C_6H_5N_2^+Cl^- \xrightarrow{CuCN/KCN} C_6H_5CN$ | 4) $C_6H_5N_2^+Cl^- \xrightarrow{KI/warm} C_6H_5I$      |

**7. Chlorobenzene on reaction with CH<sub>3</sub>Cl in presence of AlCl<sub>3</sub> gives**

- |                          |                                      |
|--------------------------|--------------------------------------|
| 1) Toulene               | 2) m-chloro toulene                  |
| 3) Only o-chloro toluene | 4) Mixture of o- and p-chlorotoulene |

8. Aryl halides are less reactive towards nucleophilic substitution reaction as compared to alkyl halides due to

- 1) The formation of less stable carbonium ion
- 2) Resonance stabilization
- 3) Longer – carbon – halogen bond
- 4) Both (1) and (2)

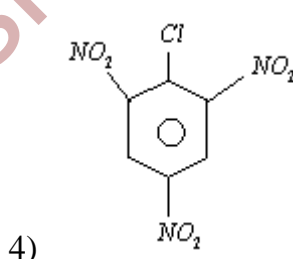
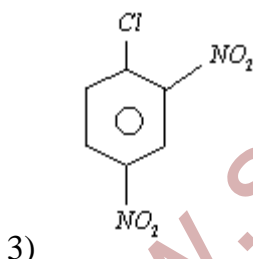
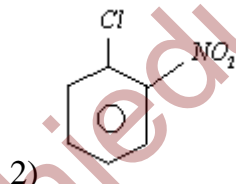
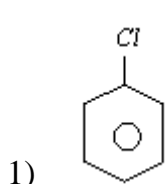
9. Chlorobenzene on nitration gives major product of

- 1) 1-chloro - 4 - nitro benzene
- 2) 1- chloro - 3 nitro benzene
- 3) 1, 4 - dinitro benzene
- 4) 2, 4, 6 - tri nitro benzene

10. The reaction  $C_6H_5I + 2Na + CH_3I \rightarrow C_6H_5CH_3 + 2NaI$  is

- 1) Wurtz reaction
- 2) Fittig reaction
- 3) Wurtz - Fittig reaction
- 4) Sandmeyer reaction

11. Which of the following compound undergoes replacement of Cl by OH by merely warming with aq NaOH



12. IUPAC name of  is

- 1) 1, 2 - dichloro benzene
- 2) m-dichloro benzene
- 3) 1, 6- dichloro benzene
- 4) o- dichloro benzene

13. Chlorobenzene on reaction with  $\text{CH}_3\text{Cl}$  in the presence of  $\text{AlCl}_3$  will give

- 1) Toluene
- 2) m - Chloro toluene
- 3) p - Chloro toluene
- 4) A mixture of o - and p - chlorotoluene

14. Which of the following will be the least reactive towards nucleophilic substitution?

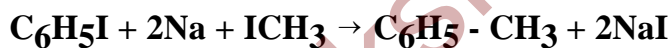
- 1)  $\text{C}_2\text{H}_5\text{Cl}$
- 2) 
- 3) 
- 4) 

15. Order of hydrolysis of the following compounds in increasing order



- 1)  $\text{I} < \text{IV} < \text{II} < \text{III}$
- 2)  $\text{IV} < \text{III} < \text{II} < \text{I}$
- 3)  $\text{I} < \text{II} < \text{III} < \text{IV}$
- 4)  $\text{I} < \text{II} < \text{IV} < \text{III}$

16. The reaction given below is known as



- 1) Wurtz reaction
- 2) Fiting reaction
- 3) Wurtz - Fiting reaction
- 4) Ullmann reaction

17. The reaction of toluene with chlorine in the presence of ferric chloride gives mainly

- 1) m - chlorotoluene
- 2) Benzyl Chloride
- 3) o - and p - Chlorotoluene
- 4) Benzyl chloride

18. Chlorobenzene reacts with Mg in dry ether to give a compound (A) which further reacts with ethanol to yield

- 1) Ethylbenzene
- 2) Phenol
- 3) Phenylmethyl ether
- 4) Benzene

**19. Non - Sticking frying pans are coated with Teflon which is polymer of**

- 1) Ethylene      2) Styrene      3) Tetrafluoroethylene      4) Chloro fluoromethane

**20. Which of the following compounds on oxidation gives benzoic acid?**

- 1) Chlorophenol      2) Chlorotoluene      3) Chlorobenzene      4) Benzyl Chloride

**21. Chlorobenzene on heating with aqueous  $\text{NH}_3$  under pressure in the presence of cuprous chloride gives**

- 1) Benzamide      2) Nitrobenzene      3) Aniline      4) Chloroaminobenzene

**Key**

1)4    2)3    3)4    4)2    5)2    6)1    7)4    8)1    9)1    10)3

11)4    12)1    13)4    14)4    15)3    16)3    17)3    18)4    19)3    20)4

21)3