



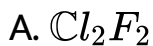
## CHEMISTRY

### BOOKS - SHARAM PUBLICATION

### HALOALKANES AND HALOARENES

#### Exercise

1. Which of the following is known as freon?



D.  $CF_4$

**Answer:**

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2. Which of the following compound is used as refrigerant?

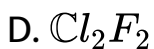
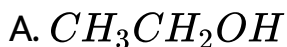
- A. Chloroform
- B. Carbon tetrachloride
- C. Dichloro difluoro methane
- D. Carbon tetra fluoride

**Answer:**



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3. Which of the following is optically active?



Answer:



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4. The reagent required to convert  $CH_3I$  to  $CH_4$  is

A. Zn - Cu couple and ethanol

B. Magnesium in ether

C. Sodium methoxide

D. Sodium in ether

**Answer:**



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5. When alkyl halide is treated with alc. KOH the compound formed is

A. Alkane

B. Alkene

C. Alcohol

D. Ether

**Answer:**

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6. Chlorobenzene on treatment with sodium in presence of dry ether gives diphenyl. The name of the reaction is

A. Fittig reaction

B. Wurtz - Fittig reaction

C. Sandmeyer reaction

D. Gattermann reaction

**Answer:**

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7. The bromination of ethyl benzene in presence of sunlight will preferential yield

- A. 1-bromo -1 phenyl ethane
- B. 2-bromo -1-phenyl ethane
- C. p-bromo phenyl ethane
- D. o-bromophenyl ethane

**Answer:**

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8. In the laboratory fluoro benzene is prepared

- A. By heating phenol with  $HF$  and  $KF$
- B. By heating diazonium chloride with  $BF_3$
- C. By direct fluorination of benzene with  $F_2$  gas
- D. By heating bromo benzene with  $NaF$  solution

**Answer:**



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9. The reaction of  $HBr$  with propene in absence of peroxide is an example of

- A. free radical reaction
- B. nucleophilic addition
- C. electrophilic substitution
- D. electrophilic addition

**Answer:**



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**10. Which of the following has highest melting point ?**

- A. chlorobenzene
- B. o-dichloro benzene
- C. m-dichlorobenzene



D. p-dichlorobenzene

**Answer:**

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11. Which of the following are arranged in the decreasing order of dipole moment ?



**Answer:**



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12. Which of the following forms propane nitrile as the major product ?

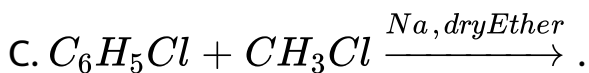
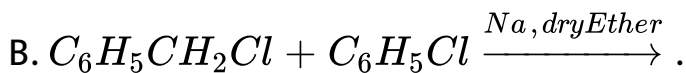
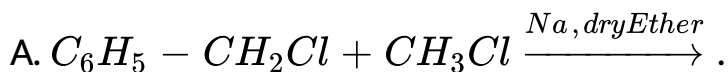
- A. Ethyl bromide + alcoholic KCN
- B. Propyl bromide + alcoholic KCN
- C. Propyl bromide + alcoholic  $AgCN$
- D. Ethyl bromide + alcoholic  $AgCN$

**Answer:**



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13. Which of the following is not an example of Wurtz - Fitting reaction ?



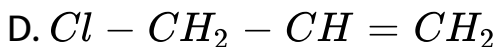
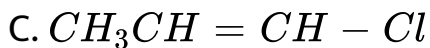
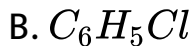
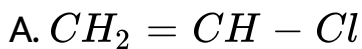
D. None of the above

**Answer:**



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

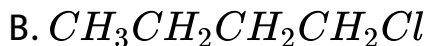


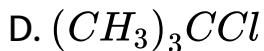
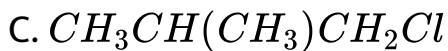
**Answer:**



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15. Which of the following compounds has the highest boiling point ?





**Answer:**

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16. When HCl gas is passed through propene in the presence of benzoyl peroxide, it gives :

A. 2 - Chloro propane

B. Allyl chloride

C. n- propyl chloride

D. No reaction

**Answer:**

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17. On sulphonation of  $C_6H_5Cl$  we get

- A. m - chloro benzene sulphonic acid
- B. Benzene sulphonic acid
- C. o -chloro benzene sulphonic acid
- D. o - and p- chloro benzene sulphonic acid

**Answer:**

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18. Aryl halides are less reactive towards nucleophiles than alkyl halides due to :

- A. the formation of less stable carbonium ion
- B. resonance stabilization
- C. longer carbon halogen bond
- D. inductive effect

**Answer:**



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19. Chlorination of toluene in presence of light and heat followed by reaction with  $NaOH$  gives

A. o- Cresol

B. m- Cresol

C. Mixture of (a) and (b)

D. benzoic acid

**Answer:**



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20. The compound that is most reactive towards electrophilic substitution is

A. Toluene

B. Benzene



C. Nitrobenzene

D. Benzoic acid

**Answer:**

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**21.** Write the structure of 2-chloro-3-methylpentane

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**22.** Out of methyl bromide and methyl chloride which has higher boiling point.

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23. Which methyl halide has highest density ?

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24. Which reagent is used for dehydrohalogenation of an alkyl halide ?

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25. Write the chemical reaction to illustrate Markovnikov's rule.

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26. What is plane polarised light ?

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27. What is the condition to be satisfied for a compound to be chiral ?

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28. What is racemic mixture ? Give an example.

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29. What type of isomerism is shown by lactic acid ?



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30. Give an example of Wurtz – Fittig reaction.



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31. Between  $S_N1$  and  $S_N2$  reaction, which one occurs by a carbocation intermediate ?



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32. Between  $(CH_3)_3CCl$  and  $CH_3Cl$ , which will give  $S_N2$  reaction.



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33. What is the action of  $CH_3Br$  with  $KCN$ ?

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34. Arrange the following in the order of increasing boiling point.



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35. State anti Markownikoff 's rule.

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36. Write the isomers of the compound having formula  $C_4H_9Br$ .

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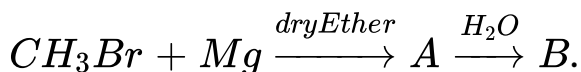
37. Write the structure of p- bromo chloro benzene.

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38. Which compound is formed when chlorobenzene is treated with  $Cl_2$  in presence of anhydrous  $FeCl_3$  ?

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39. Identify the product A and B of the following reaction.



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40. What happens when ethyl bromide is treated with alc. KOH?

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41. Fill in the blanks : Diethyl ether is obtained from ethyl bromide by treating with ..... and the reaction is called.....

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42. Fill in the blanks : The reaction of alkyl halide with sodium metal in presence of ether gives .....

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43. Fill in the blanks :When toluene reacts with chlorine in presence of sunlight gives .....

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44. What happens with when acetic acid is heated with  $P_2O_5$  ?



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45. Fill in the blanks : Alkyl halides are insoluble in water because they do not form ..... Bonds water.



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46. Fill in the blanks :With potassium cyanide, alkyl halides give ..... While with silver cyanide ..... Are the major product.



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47. Fill in the blanks :Hydrolysis of 2- bromo-3 -methyl butane yields .....



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48. The formation of phenol from chlorobenzene is an example of \_\_\_\_\_ substitution and the reaction is called as \_\_\_\_\_



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49. Boiling point of alcohol is comparatively higher than that of corresponding alkane due to

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50. Fill in the blanks : ..... Is used to eradicate malaria.

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51. Fill in the blanks : Toluene reacts with  $Br_2$  in presence of  $FeBr_3$  to give .....

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52. Fill in the blanks :  $(A) \xrightarrow{PCl_5} (B) \xrightarrow{AlcKOH} CH_2 = CH_2$ .

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53. Fill in the blanks :  $C_2H_5I \xrightarrow{AlcKOH} \dots\dots\dots$

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54. Fill in the blanks :  $CH_3CH = CH_2 \xrightarrow{HBr} \dots\dots\dots$

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55. Fill in the blanks :



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56. Fill in the blanks : In ..... substitution nucleophilic reaction there is inversion of configuration.

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57. Fill in the blanks :The substitution nucleophilic reaction that proceeds through a carbocation is .....

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58. Fill in the blanks : n - propanol reacts with  $P_4 + Br_2$  to give the product .....

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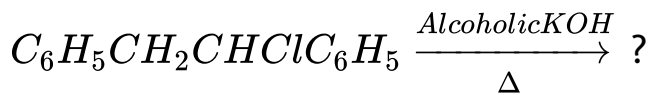
59. Fill in the blanks :  $C_6H_5Cl \xrightarrow[200^\circ c \& pressure]{aqNH_3}$  .

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60. What happens when benzene is treated with  $I_2$  in presence of Conc.  $HNO_3$  ?

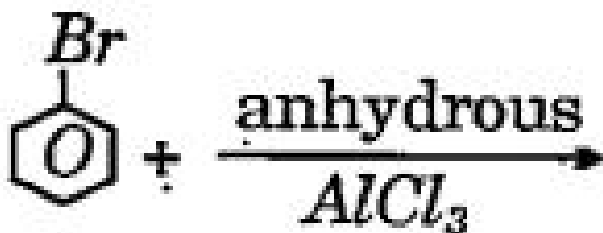
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61. The following reaction gives two products. Write the structure of products.



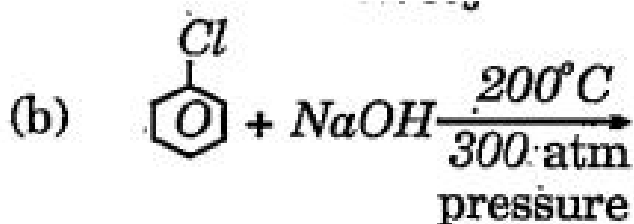
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62. Write the product of following reactions.



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63. Write the product of following reactions.



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64. What are enantiomers and diastereomers ?

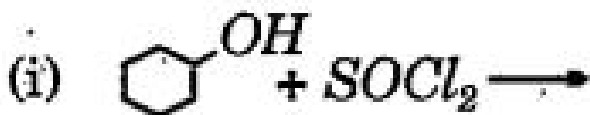
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65. Why is ( ± ) butan-2-ol is optically inactive?

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66. Draw the structure of the major monohalo products in each of the following reactions.



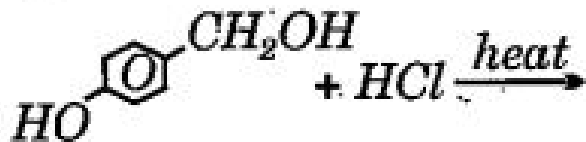
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67. Draw the structure of the major monohalo products in each of the following reactions.



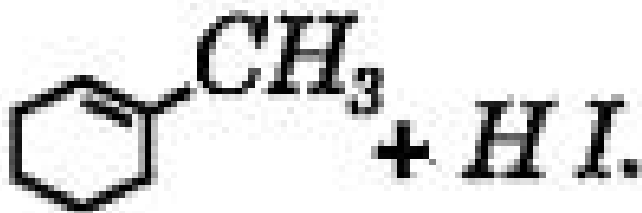
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68. Draw the structure of the major monohalo products in each of the following reactions.



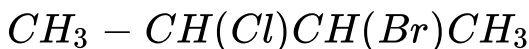
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69. Draw the structure of the major monohalo products in each of the following reactions.



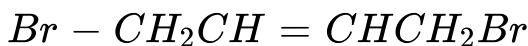
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70. Write the IUPAC name of the following compounds.



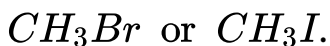
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71. Write the IUPAC name of the following compounds.



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72. Which compound in each of the following pairs will react faster in  $S_N2$  reaction with  $OH^-$  ?





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73. Which compound in each of the following pairs will react faster in  $S_N2$  reaction with  $OH^-$  and why?

$(CH_3)_3CCl$  or  $CH_3Cl$



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74. Why dipole moment of chlorobenzene is lower than that of cyclohexyl chloride ?



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75. Write the structure of the major organic products in each of the following reactions.



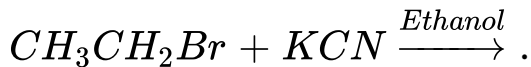
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76. Write the structure of the major organic products in each of the following reactions.



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77. Write the structure of major product in the following reactions.



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**78.** Write the structure of major product in the following reactions.



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**79.** "Direct iodination of benzene is difficult." Explain. Suggest an alternative route for the synthesis of iodo benzene.

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**80.** What happens when ethanol is treated with  $PCl_5$  and the resultant product is treated with alcoholic KOH solution ?

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**81.** How can you convert toluene to benzyl alcohol ?

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**82.** How will you convert benzene to biphenyl ?

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**83.** How is ethyl iodide converted to diethyl ether ?

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**84.** What happens when benzene reacts with ethyl bromide in presence of anhydrous aluminium chloride ?

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**85.** What is Hunsdiecker reaction ? Give an example.

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**86.** What is peroxide effect ?





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87. For a given alcohol, the reactivity of halogen acids decreases in the order  $HI > HBr > HCl$ . Give reason.

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88. What happens when methyl cyanide is reduced by sodium and ethyl alcohol ? What is the name of this reaction ?

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89. What is Saytzeff rule ? Explain with an example.

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**90.** Haloarenes are much less reactive than haloalkanes towards nucleophilic substitution reaction. Give reason.

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**91.** How phenol is obtained from chlorobenzene ?

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**92.** What is Fittig and Wurtz-Fittig reaction?

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93. Write a note on  $S_N1$  reaction.

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94. What does  $S_N2$  reaction stand for ? Write the mechanism.

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95. In  $S_N2$  reaction the order of reactivity of alkylhalides is \_\_\_\_\_ methyl halides  $>$   $1^\circ$  halide  $>$   $2^\circ$  halides  $>$   $3^\circ$  halides - Why ?

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96. Give two methods of preparation of ethyl chloride.

What happens when ethyl chloride is treated with

$Ag_2O$  in boiling water`

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97. Give two methods of preparation of ethyl chloride.

What happens when ethyl chloride is treated with

ethanolic solution of  $NH_3$ .

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98. How can you prepare chlorobenzene from benzene?

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**99.** How will you prepare Chloro benzene from benzene diazonium chloride.

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**100.** What happens when iodo benzene is heated with copper powder in a sealed tube

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**101.** What happens when Chlorobenzene is treated with  $CH_3Cl$  in presence of

anhydrous  $AlCl_3$



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