CHEMISTRY

BOOKS - KALYANI CHEMISTRY (ENGLISH)

HALOALKANES AND HALOARENES

Intext Questions

1. Which of the following does not exhibit position as well as chain isomerism ?

(i) C_2H_5Br (ii) C_4H_9Br

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2. What is the number of structural isomers of monohalogenated n-butane?

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3. Which of the following dihalides are $\alpha - \omega$, gem and vicinal dihalides?

1,2-Dichloropropane

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4. Which of the following dihalides are $\alpha - \omega$, gem and vicinal dihalides?

1,3-Dichloropropane

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5. Which of the following dihalides are $\alpha - \omega$, gem and vicinal dihalides?

2,2-Dichloropropane

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6. Which of the following dihalides are $\alpha - \omega$, gem and vicinal dihalides?

1,2-Dichlorobutane

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7. Draw the possible isomers of the compound with molecular formula C_3H_6O and also give their electron dot structures.

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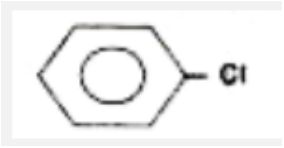
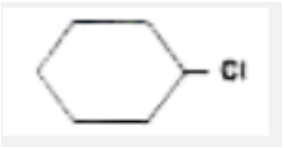
8. Select the aryl halide from the following.

A. 

B. 

C.

D. None of these

Answer: A

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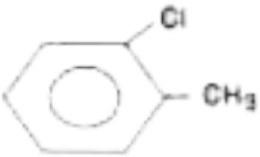
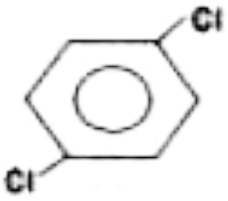
9. Which of the following is an aryl alkyl halide.



A.

B.



C.

D. None of these

Answer: B

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10. Identify all the possible monochloro structural isomers expected to be formed on free radical monochlorination of $(CH_3)_2CHCH_2CH_3$.

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11. Draw the structure of the major monohalo product in each of the

$$CH_3CH_2 - \underset{\underset{CH_3}{|}}{C} = CH_2 + HBr \xrightarrow{\text{peroxide}}$$

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12. Draw the structure of the major monohalo product in each of the

$$CH_3CH_2Br + NaI \xrightarrow[\text{reflux}]{\text{acetone}}$$

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13. Draw the structure of the major monohalo product in each of the

$CH_3CH_2Br + Hg_2F_2 \xrightarrow{\text{acetone}}$

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14. Arrange the following in the decreasing order of their boiling points:

(i) C_2H_5Br (ii) C_2H_5Cl (iii) C_2H_5I

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15. Arrange the following in the decreasing order of their boiling points:

(i) n-Butyl chloride (ii) Isobutyl chloride (iii) ter-Butyl chloride.

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16. Why the boiling point of ethyl bromide is higher than that of ethyl chloride?

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17. Why the halogen compounds used as solvents in industry are chlorides rather than bromides?

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18. Arrange each set of compounds in order of increasing boiling point : Bromomethane, bromoform, chloromethane, dibromomethane.

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19. Arrange each set of compounds in order of increasing boiling point : Propane, 1-chloropropane, isopropylchloride, 1-chlorobutane.

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20. Which metal is used in the preparation of Grignard's reagents from alkyl halides ?

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21. Which of the following alcohols is most reactive .

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22. Which of the following alcohols is (i) most reactive and (ii) least reactive towards Luca's reagent (anhydrous $ZnCl_2$ + conc. HCl)?

(a) $CH_3CH_2CH_2CH_2OH$ (b) $CH_3CH_2\underset{\underset{OH}{|}}{CH}-CH_3$ (c) $(CH_3)_3COH$

A. $CH_3CH_2CH_2CH_2OH$

B. $CH_3CH_2\underset{\underset{OH}{|}}{CH}-CH_3$

C. $(CH_3)_3COH$

D. None of these

Answer: A

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23. How will you prepare from propene Allyl iodide.

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24. How will you prepare from propene Allyl fluoride ?

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25. Arrange the halide ions $\left(Cl^-, F^-, Br^- \text{ and } I^-\right)$ in order of increasing basicity and nucleophilicity.

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26. In terms of Lewis concept, categorise the reaction site C of RX.

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27. Does the rates of the reaction depend on the amount of δ^+ on the attacked C of RX?

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28. Supply formulae for the organic products from the reaction of $CH_3CHCl.CH_2CH_3 + NaOH(aq)$

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29. Give the structures of the main organic substitution products expected from the reaction of 1-bromobutane with $(CH_3)_3N$

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30. Give the structures of the main organic substitution products expected from the reaction of 1-bromobutane with CH_3COOAg

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31. Give the structures of the main organic substitution products expected from the reaction of 1-bromobutane with $LiAlH_4$

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32. Give reagents (inorganic or organic), needed to convert benzyl bromide into Benzyl iodide.

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33. Give reagents (inorganic or organic), needed to convert benzyl bromide into benzyl alcohol

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34. Give reagents (inorganic or organic), needed to convert benzyl bromide into benzyl cyanide

Watch Video Solution

35. Give reagents (inorganic or organic), needed to convert benzyl bromide into benzyl acetate

Watch Video Solution

36. Give reagents (inorganic or organic), needed to convert benzyl bromide into (nitromethyl) benzene

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37. Give reagents (inorganic or organic), needed to convert benzyl bromide into tri-n-butyl benzyl ammonium bromide.

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38. Arrange the following halides in order of increasing S_N^2 reactivity:

$CH_3Cl, CH_3Br, CH_3CH_2Cl, (CH_3)_2CHCl.$

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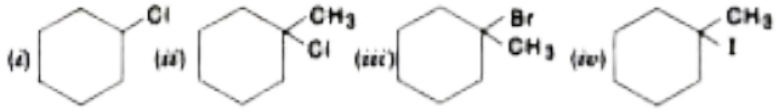
39. Predict the order of reactivity of the following compounds in S_{N^1} reactions :



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40. Predict the order of reactivity of the following compounds in S_N^1 and S_N^2 reactions:

$C_6H_5CH_2Br. C_6H_5CH(C_6H_5)Br,$

$C_6H_5CH.(CH_3)Br, C_6H_5C.(CH_3).(C_6H_5)Br.$

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41. Predict the order of reactivity of the following compounds in S_N^1 and S_N^2 reactions:

$C_6H_5CH_2Br. C_6H_5CH(C_6H_5)Br,$

$C_6H_5CH.(CH_3)Br, C_6H_5C.(CH_3).(C_6H_5)Br.$

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42. Which out of benzene and chlorobenzene undergoes electrophilic substitution easily?

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43. Identify from the following.

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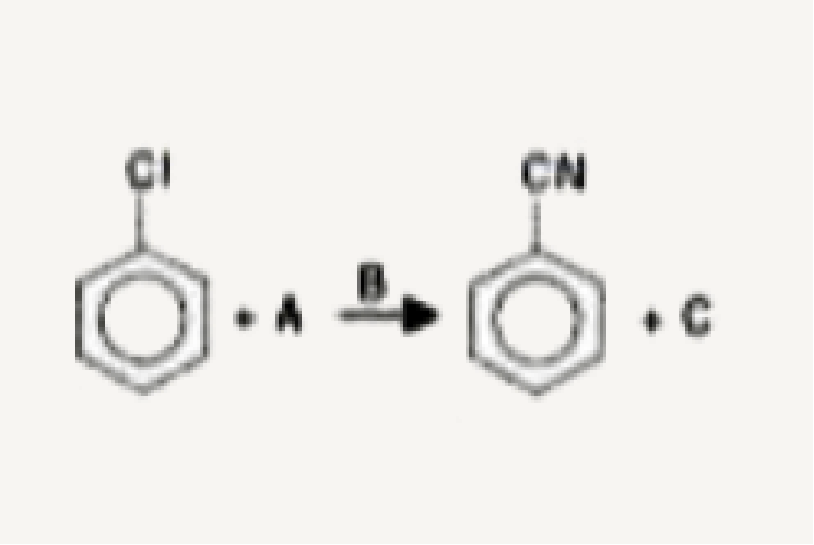
44. Identify from the following.



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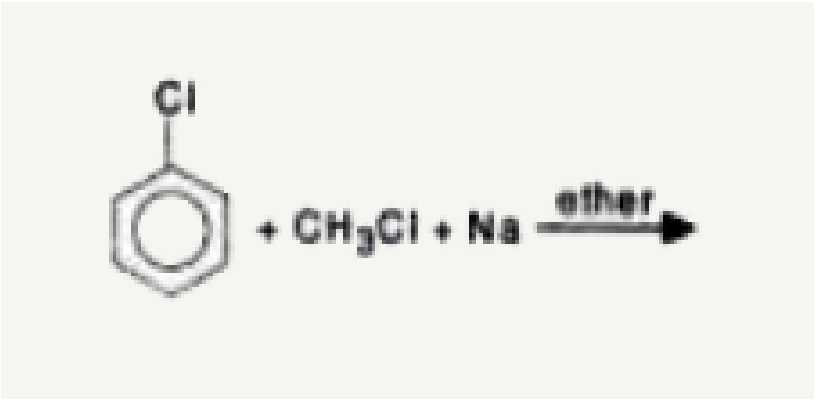
45. Complete the following



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46. Arrange the following compounds in order of increasing reactivity towards nucleophilic substitution :

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47. Write the structural formulae of various isomers of C_7H_7Cl containing benzene ring. Which out of these has weakest C-Cl bond ?

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48. How will you distinguish between Chlorobenzene and benzyl chloride.

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49. How will you distinguish between ethyl bromide and vinyl bromide?

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Exercise Part I Objective Questions Fill In The Blank

1. sp^2, sp^3, polar, non-polar, gem, vicinal, 2, 3, Grove's, Darzen, Markownikov's rule, Kharasch, increase, decrease

The carbon-halogen bond in alkyl halides is a ..... Covalent bond.

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2. sp^2, sp^3, polar, non-polar, gem, vicinal, 2, 3, Grove's, Darzen, Markownikov's rule, Kharasch, increase, decrease

In alkyl halides, the carbon atom attached to the halogen atom is ..... hybridized.

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3. sp^2, sp^3, polar, non-polar, gem, vicinal, 2, 3, Grove's, Darzen, Markownikov's rule, Kharasch, increase, decrease

Dihalides in which two halogen atoms are attached to two adjacent atoms are called ..... dihalides.

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4. What is the number of structural isomers of monohalogenated n-butane?

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5. sp^2, sp^3, polar, non-polar, gem, vicinal, 2, 3, Grove's, Darzen, Markownikov's rule, Kharasch, increase, decrease

Alcohols on treatment with thionyl chloride, in presence of pyridine, yield alkyl halides. This reaction is known as ..... process.

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6. sp^2, sp^3, polar, non-polar, gem, vicinal, 2, 3, Grove's, Darzen, Markownikov's rule, Kharasch, increase, decrease

Addition of HBr to propene, in presence of organic peroxides, gives 1-bromopropane as the major product. It is called ..... effect.

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7. sp^2, sp^3, polar, non-polar, gem, vicinal, 2, 3, Grove's, Darzen, Markownikov's rule, Kharasch, increase, decrease

For isomeric alkyl halides, boiling points ..... with branching of carbon chains.

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8. sp^2, sp^3, polar, non-polar, gem, vicinal, 2, 3, Grove's, Darzen, Markownikov's rule, Kharasch, increase, decrease

The compound prepared by the action of magnesium on ethyl bromide in dry ether is known as ..... reagent.

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9. sp^2, sp^3, polar, non-polar, gem, vicinal, 2, 3, Grove's, Darzen, Markownikov's rule, Kharasch, increase, decrease

Reaction between phenol and alkaline chloroform is known as.....

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10. sp^2, sp^3, polar, non-polar, gem, vicinal, 2, 3, Grove's, Darzen,Primary Amine, Markownikov's rule, Kharasch, increase, decrease

Isocyanides can be obtained by heating alkyl halide with KOH and.....

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11. sp^2, sp^3, polar, non-polar, gem, vicinal, 2, 3, Grove's, Darzen, Markownikov's rule, Kharasch, increase, decrease

The reaction of phosphorus pentachloride with ethanol gives.....

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12. sp^2, sp^3, polar, non-polar, gem, vicinal, 2, 3, Grove's, Darzen, Markownikov's rule, Kharasch, increase, decrease

When an alkyl halide is treated with a solution of sodium alkoxide, the product formed is an.....and the reaction is called.....

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13. sp^2, sp^3, polar, non-polar, gem, vicinal, 2, 3, Grove's, Darzen, Chloral Hydrate ,Markownikov's rule, Kharasch, increase, decrease

Pure chloroform is obtained by heating ..... with aqueous solution of sodium hydroxide.

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14. sp^2, sp^3, polar, non-polar, gem, vicinal, 2, 3, Grove's, Darzen, Conc. Hno3 ,Markownikov's rule, Kharasch, increase, decrease

Chloropicrin is formed by the action of ..... on chloroform.

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15. sp^2, sp^3, polar, non-polar, gem, vicinal, 2, 3, Grove's, Darzen, Markownikov's rule, Acetone,Kharasch, Acetone,increase, decrease

Chloroform produces a hypnotic on treatment with..... .

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Exercise Part I Objective Questions Multiple Choice Questions

1. Alkyl halides react with metallic sodium in dry ether producing

A. Frankland's reaction

B. Sandmeyer's reaction

C. Wurtz reaction

D. Kolbe's reaction.

Answer: C

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2. By heating a mixture of $CHCl_3$ with silver powder, the compound formed is

A. acetylene

B. silver acetate

C. methanol

D. none of these

Answer: A

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3. Methyl alcohol reacts with phosphorus trichloride to form

A. methane

B. methyl chloride

C. acetyl chloride

D. dimethyl ether.

Answer: B

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4. Write the reactions between methane and chlorine in the presence of diffused sunlight.

A. $CHCl_3$

B. CH_3Cl

C. CH_2Cl_2

D. $CH_3CH_2CH_3$.

Answer: D

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5. Which of the following is gem halide ?

A. $CH_3CHBrCHBrCH_3$

B. $CH_2Br.CH_2Br$

C. $CHBr = CHBr$

D. CH_3CHBr_2

Answer: D

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6. Which one is formed when sodium phenoxide is heated with ethyl iodide ?

A. Phenetole

B. Ethyl phenyl alcohol

C. Phenol

D. None of these.

Answer: A

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7. On heating chloroform with aqueous potash we get

A. butanoic acid

B. propanoic acid

C. ethanoic acid

D. methanoic acid.

Answer: D

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8. The reaction conditions leading to the best yield of C_2H_5Cl are

A. $C_2H_6(\text{excess}) + Cl_2 \xrightarrow{\text{UV light}}$

B. $C_2H_6 + Cl_2 \xrightarrow[\text{temp.}]{\text{dark room}}$

C. $C_2H_6 + Cl_2(\text{excess}) \xrightarrow[\text{light}]{UV}$

D. $C_2H_6 + Cl_2 \xrightarrow{\text{UV light}}$

Answer: A

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9. Out of the following compounds, which one will have a zero dipole moment?

A. 1, 1-Dichloroethylene

B. cis-1, 2-Dichloroethylene

C. trans-1, 2-dichloroethylene

D. none of these compounds.

Answer: C

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10. The order of reactivity of following alcohols with halogen acids is _____.

$CH_3CH_2 - CH_2 - OH$

$CH_3CH_2 - \underset{\underset{CH_3}{|}}{CH} - OH$

$CH_3CH_2 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - OH$

A. $A > B > C$

B. $C > B > A$

C. $B > A > C$

D. $A > C > B$

Answer: B

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11. Which of the following alcohols will yield the corresponding alkyl chloride on reaction with concentrated HCl at room temperature?

A. $CH_3CH_2 - CH_2 - OH$

B. $CH_3CH_2 - \underset{\underset{CH_3}{|}}{CH} - OH$

C. $CH_3CH_2 - \underset{\underset{CH_3}{|}}{CH} - CH_2OH$

D. $CH_3CH_2 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{-}} OH$

Answer: D

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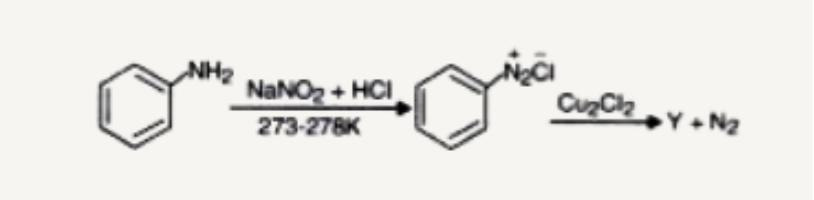
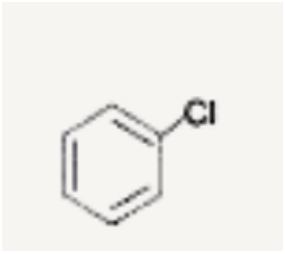
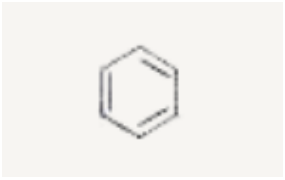
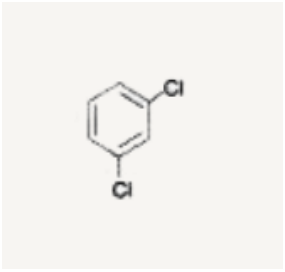
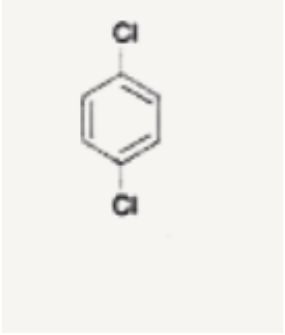
12. Identify the compound Y in the following reaction :



A. 

B. 

C. 

D. 

Answer: A

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13. Toluene react with a halogen in the presence of iron (III) chloride giving ortho andpara halo compounds. The reactions is

A. Electrophilic elimination reaction

B. Electrophilic substitution reaction

C. Free radical addition reaction

D. Nucleophilic substitution reaction

Answer: B

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14. Which of the following is halogen exhange reaction?

A. $RX + NaI \rightarrow RI + NaX(X: Cl, Br)$

B. 

C. $R - OH + HX \xrightarrow{ZnCl_2} R - X + H_2O$

D. 

Answer: A

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15. Which reagent will you use for the following reaction ?

$CH_3CH_2CH_2CH_3 \rightarrow CH_3CH_2CH_2CH_2Cl + CH_3CH_2CHClCH_3$

A. Cl_2 / UV light

B. $NaCl + H_2SO_4$

C. Cl_2 gas in dark

D. Cl_2 gas in the presence of iron in dark.

Answer: A

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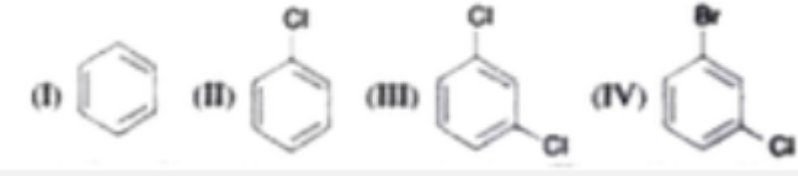
16. Arrange the following compounds in the increasing order of their densities.



A. `I

B. `I

C. `IV

D. `II

Answer: A

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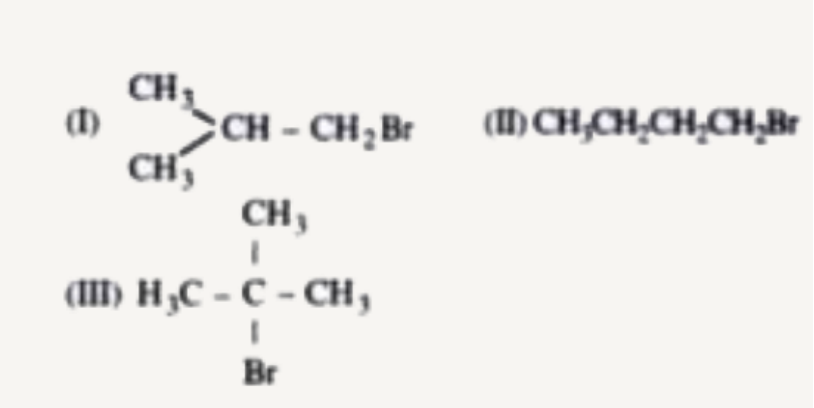
17. Arrange the following compounds in increasing order of their boiling points.



A. $II < I < III$

B. $I < II < III$

C. $III < I < II$

D. $III < II < I$

Answer: C

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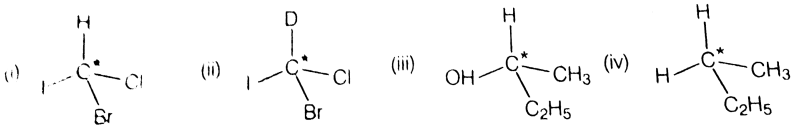
18. In which of the following molecules carbon atom marked with asterik (*) is asymmetric ?



A. I, II, III, IV

B. I, II, III

C. II, III, IV

D. I, III, IV

Answer: B

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19. Match the following :

Compound	Magnetic property
(*i*) NaCl	(*a*) Ferrimagnetic
(*ii*) MnO	(*b*) Paramagnetic
(*iii*) $CrCl_3$	(*c*) Ferromagnetic
(*iv*) CrO_2	(*d*) Diamagnetic
(*v*) $MgFe_2O_4$	(*e*) Antiferromagntic

A. 

B. 

C. 

D. 

Answer: A

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20. Which of the following is an example of vic-dihalide?

A. Dichloromethane

B. 1,2- dichloroethane

C. Ethylidene chloride

D. Allyl chloride

Answer: B

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21. The position of Br in the compound in $CH_3 = CHC(Br)(CH_3)_2$ can be classified as.....

A. Allyl

B. Aryl

C. Vinyl

D. Secondary

Answer: A

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22. Chlorobenzene is formed by reaction of chlorine with benzene in the presence of $AlCl_3$. Which of the following? Species attacks the benzene ring in this reaction ?

A. Cl^-

B. Cl^+

C. $AlCl_3$

D. $[AlCl_4]^-$

Answer: B

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23. Ethylidene chloride is a/an.....

A. vic- dihalide

B. gem-dihalide

C. allylic halide

D. vinylic halide

Answer: B

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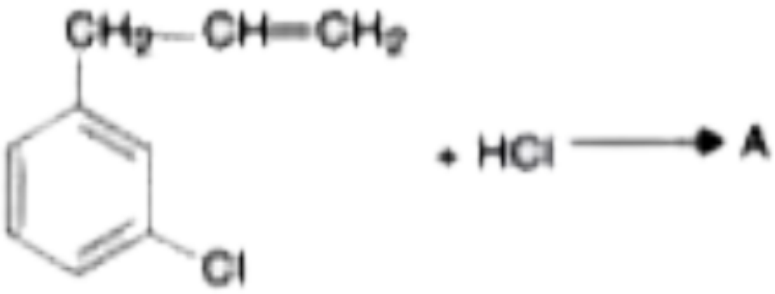
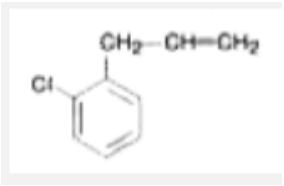
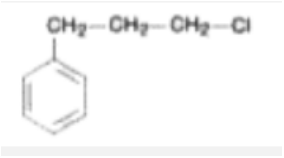
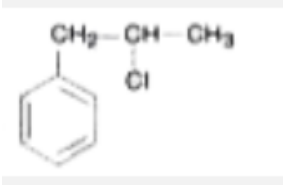
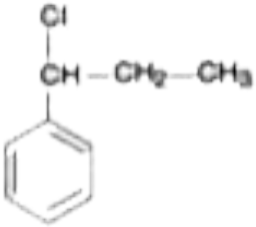
24. What is 'A' in the following reaction ?



A. 

B. 

C. 

D. 

Answer: C

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25. A primary alkyl halide would prefer to undergo.....

A. S_{N^1} reaction

B. S_{N^2} reaction

C. α - Eliminaton

D. Racemization

Answer: B

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26. Which of the following alkyl halides will undergo S_{N^1} reaction most readily?

A. $(CH_3)_3C - F$

B. $(CH_3)_3C - Cl$

C. $(CH_3)_3C - Br$

D. $(CH_3)_3C - I$

Answer: D

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27. What is the correct IUPAC name for

$$CH_3 - \underset{\underset{C_2H_5}{|}}{CH} - CH_2 - Br\,?$$

A. 1 - Bromo - 2- ethylpropane

B. 1-Bromo-2-ethyl -2- methylethane

C. 1-Bromo-2-methylbutane

D. 2-Methyl-1-bromobutane

Answer: C

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28. What should be the correct IUPAC name for diethylbromomethane?

A. 1-Bromo-1, 1-diethylmethane

B. 3-Bromopentane

C. 1-Bromo-1-ethylpropane

D. 1-Bromopentane

Answer: B

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29. The reaction of toluene with chlorine in the presence of iron and in the absence of light yields____.

A. 

B. 

C. 

D. Mixture of (ii) and (iii)

Answer: D

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30. Chloromethane on treatment with excess of ammonia yields mainly

A. N, N-Dimethylmethanamine 

B. N-methylmethanamine $(CH_3 - NH - CH_3)$

C. Methanamine (CH_3NH_2)

D. Mixture containing all these in equal proportion.

Answer: C

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31. Molecules whose mirror image is non-superimposable over them are known as chiral. Which of the following molecules is chiral in nature ?

A. 2-Bromobutane

B. 1-Bromobutane

C. 2-Bromopropane

D. 2-Bromopropan-2-ol

Answer: A

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32. Reaction of $C_6H_5CH_2Br$ with aqueous sodium hydroxide follows.....

A. SN^1 mechanism

B. SN^2 mechanism

C. Any of the above two depending upon the temperature of reaction

D. Saytzeff rule

Answer: A

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33. Bond energies can be obtained by using the following relation: $\Delta H(reaction) = \sum$ Bond energy of bonds, broken in the reactants $- \sum$ Bond energy fo bonds, formed in the products

Bond enegry depends on three factors:

a. Greater is the bond length, lesser is the bond enegry.

b. Bond energy increases with the bond multiplicity.

c. Bond enegry increases with electronegativity difference between the bonding atoms.

In CH_4 molecule, which of the following statement is correct about the $C-H$ bond enegry?

A. 1,2,3,4

B. 2,3

C. 1,4

D. 1,2,3

Answer: B

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34. Which of the following compounds will give racemic mixture on nucleophilic substitution by OH^- ion?

$(I) CH_3 - \underset{\underset{C_2H_5}{|}}{\mathrm{CH}} - Br$

(II) $CH_3 - \underset{\underset{C_2H_5}{|}}{\overset{\overset{Br}{|}}{C}} - CH_3$

A. I

B. I, II, III

C. II, III

D. I, III

Answer: A

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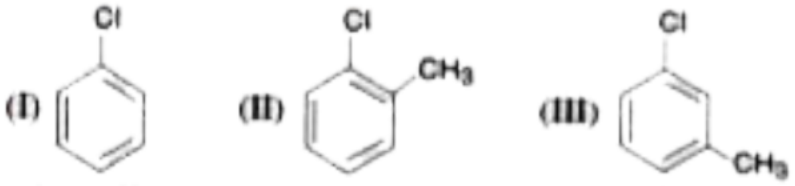
35. Arrange the compounds in increasing order of rate of reaction towards nucleophilic substitution.



A. $I < II < III$

B. $III < II < I$

C. $I < III < II$

D. $III < I < II$

Answer: C

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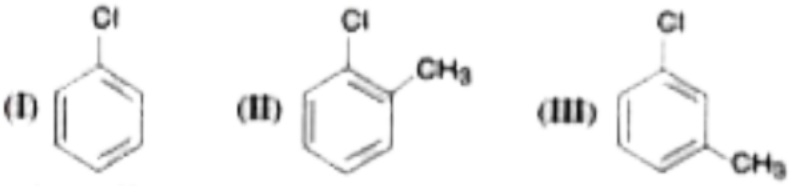
36. Arrange the compounds in increasing order of rate of reaction towards nucleophilic substitution.



A. `I

B. `III

C. `I

D. `III

Answer: D

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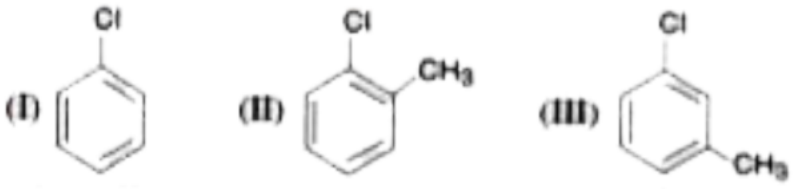
37. Arrange the compounds in increasing order of rate of reaction towards nucleophilic substitution.



A. $I < II < III$

B. $III < II < I$

C. $I < III < II$

D. $III < I < II$

Answer: D

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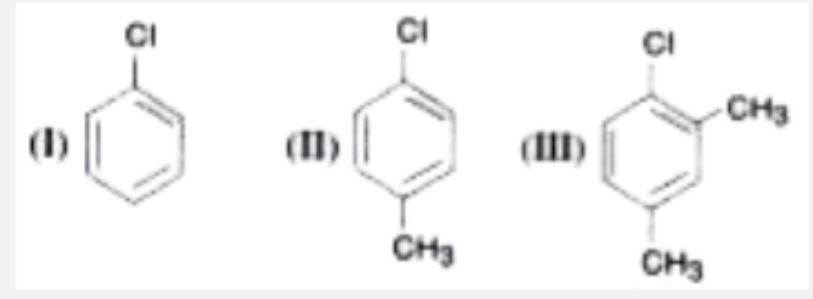
38. Arrange the compounds in increasing order of rate of reaction towards nucleophilic substitution.



A. $I < II < III$

B. $III < II < I$

C. $I < III < II$

D. $III < I < II$

Answer: C

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39. Which of the correct increasing order of boiling points of the following compounds?

1-Iodobutane,1-Bromobutane,1-Chlorobutane, Butane

A. Butane lt 1-Chlorobutane lt 1-Bromobutane lt 1-Iodobutane

B. 1-Iodobutane lt 1-Bromobutane lt 1-Chlorobutane lt Butane

C. Butane lt 1-Iodobutane lt 1-Bromobutane lt 1-Chlorobutane

D. Butane lt 1-Chlorobutane lt 1-Iodobutane lt 1-Bromobutane.

Answer: A

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40. Which is the correct increasing order of boiling points of the following compounds?

1-Bromoethane,1-Bromopropane,1-Bromobutane,Bromobenzene

A. Bromobenzene lt 1-Bromobutane lt 1-Bromopropane lt 1-Bromoethane

B. Bromobenzene lt 1-Bromoethane lt 1-Bromopropane lt 1-Bromobutane

C. 1-Bromopropane lt 1-Bromobutane lt 1-Bromoethane lt Bromobenzene

D. 1-Bromoethane lt 1-Bromopropane lt 1-Bromobutane lt Bromobenzene.

Answer: D

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Exercise Part I Objective Questions Correct The Following Statements

1. The dipole moment of CH_3F is greater than that of CH_3Cl.

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2. $CH_2Br-CH_2-CH_2$ Br is a vicinal dihalide. True/False

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3. 1-chlorobutane and 2-chlorobutane are chain isomers.

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4. Alcohols on treatment with thionyl chloride, in presence of pyridine, yield alkyl chlorides. This process is called Grove's process. (True/False)

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5. Aryl halides can be prepared by the action of phosphorus halides on phenols.

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6. Reaction of HBr with propene, in absence of organic peroxides, gives 1-bromopropane as the major product.

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7. Melting and boiling points of alkynes are lower than those of the corresponding alkenes.

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8. Boiling point of ethyl chloride is higher than that of ethyl bromide.

Watch Video Solution

9. Reaction of alkyl halides with alcoholic KOH gives alcohols as the major product.

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10. In S_{N^1} reactions, primary alkyl halides are more reactive than tertiary alkyl halides.

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11. Carbon tetrachloride is inflammable.(True/False)

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12. Pure chloroform gives white ppt. with $AgNO_3$.

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Exercise Part I Objective Questions

1. MATCH THE FOLLOWING

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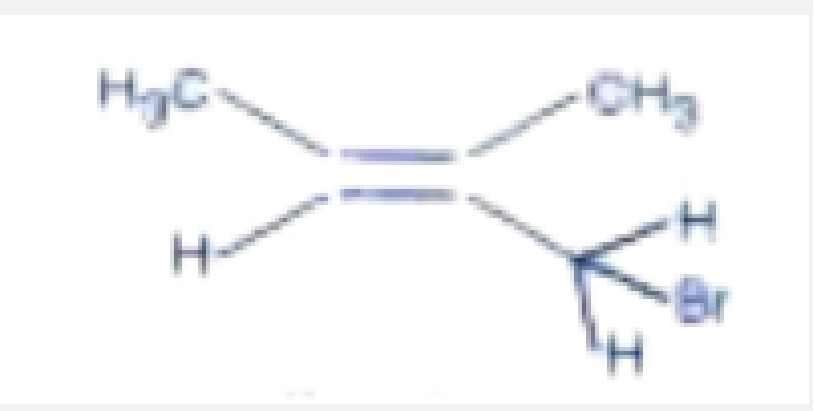
Exercise Part Ii Descriptive Questions Very Short Answer Questions

1. Write the IUPAC name of compound.



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2. Give the I.U.P.A.C.name of the following organic compound:

$$CH_3CH = \underset{\underset{CH_3}{|}}{C} - \underset{\underset{Br}{|}}{CH} - CH_3$$

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3. Write IUPAC name of

$$CH_3 - CH = \underset{\underset{CH_3}{|}}{C} - \underset{\underset{Br}{|}}{CH} - C_2H_5$$

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4. What is the number of structural isomers of monohalogenated n butane?

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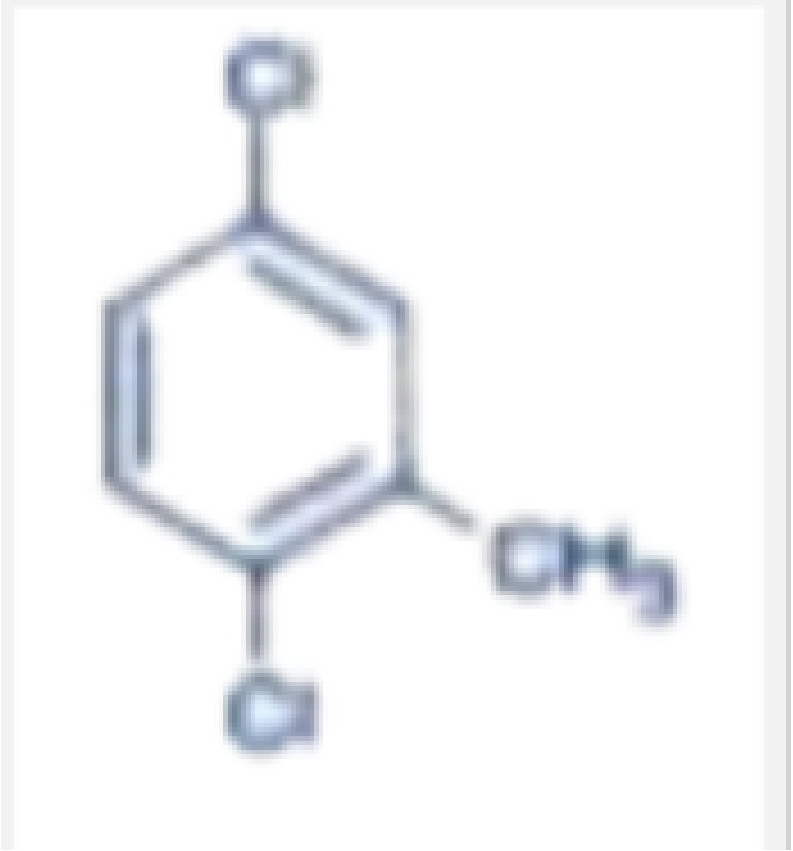
5. Write the IUPAC name of $CH_3 - \underset{\underset{Br}{|}}{CH} - CH_2 - \underset{\underset{Cl}{|}}{CH} - CH_3$

Watch Video Solution

6. Write the IUPAC name of



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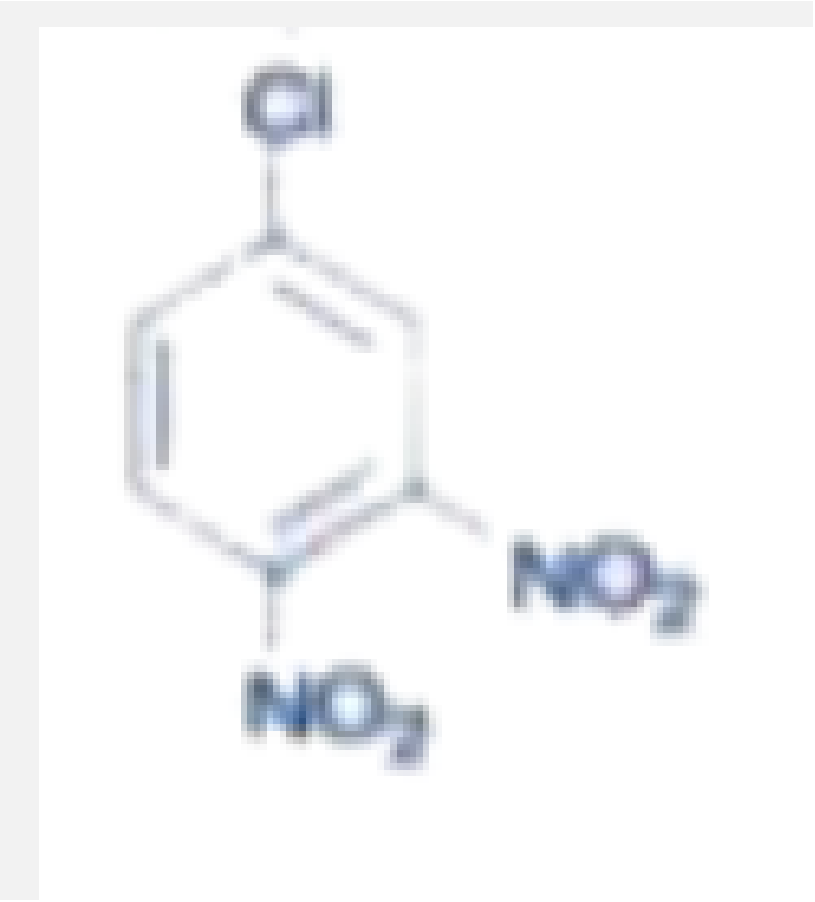
7. Write the IUPAC names of $CH_3 - \underset{CH_3}{\underset{|}{CH}} - \underset{Cl}{\underset{|}{CH}} - CH_3$

Watch Video Solution

Watch Video Solution

8. Write the IUPAC names of



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9. Write the IUPAC names of $CH_2 = CH - CH_2 - \underset{\underset{CH_3}{|}}{CH} - CH_2Cl$

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10. Which of the following does not exhibit position as well as chain isomerism ?

(i) C_2H_5Br (ii) C_4H_9Br

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11. Explain why thionyl chloride method is preferred for preparing alkyl chlorides from alcohols.

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12. Write structures of different dihalogen derivatives of propane.

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13. Complete the following by providing (A),(B), (C) and (D)

$$CH_3CH_2CH_2OH \xrightarrow{PBr_3} (A) \xrightarrow{alc.KOH} (B) \xrightarrow{HBr} (C) \xrightarrow{NH_3} (D)$$

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14. What effect should the following resonance of vinyl chloride have on its dipole moment?

$$CH_2 = CH - Cl \Leftrightarrow \overline{C}H_2 - CH = Cl^+$$

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15. A compound is formed by the substitution of two chlorine atoms for two hydrogen atoms in propane. Write the structures of the isomers possible.

Give the IUPAC name of the isomer which can exhibit enantiomerism.

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16. Use Markownikov's rule to predict the products of the following reaction $HCl \quad \text{with} CH_3CCl = CH_2$

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17. Use Markownikov's rule to predict the products of the following reaction $HCl \quad \text{with} \quad CH_3CH = C(CH_3)_2$

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18. Complete the $C_6H_5CH_3 + Cl_2 \xrightarrow[\text{Sunlight}]{383\ \text{K}}$

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19. Complete the $C_6H_5CH_2CH_3 + Cl_2 \xrightarrow[\text{Sunlight}]{383K}$

Watch Video Solution

20. Complete the

Watch Video Solution

21. Write the structure of the compound 1-chloro-4-ethyl cyclohexane.

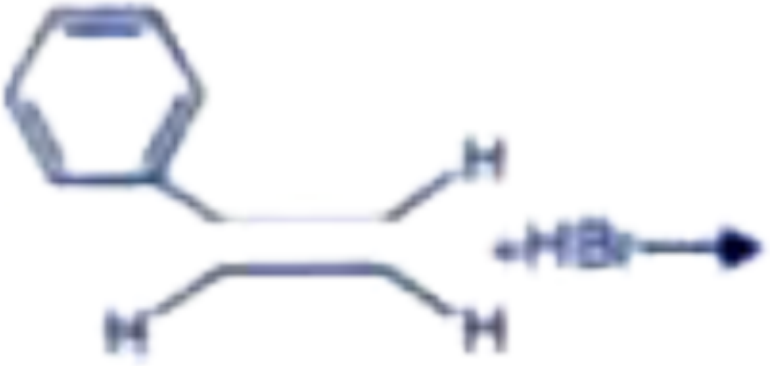
Watch Video Solution

22. Write the IUPAC name of the following compound:

$CH_2 = CHCH_2Br$

Watch Video Solution

23. Write product of the



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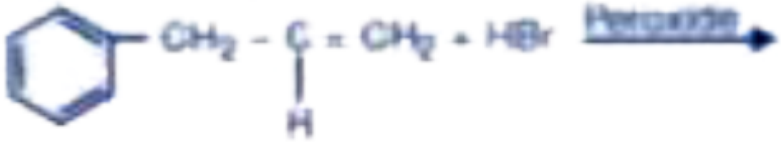
24. Write product of the $CH_3 - CH_2 - CH = CH_2 + HCl$

Watch Video Solution

25. Write product of the



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26. How will you prepare from propene (i) Allyl iodide (ii) Allyl fluoride?

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27. Which metal is used in the preparation of Grignard's reagents from alkyl halides?

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28. Which of the following alcohols is (i) most reactive and (ii) least reactive towards Luca's reagent (anhydrous $ZnCl_2$ + conc. HCl)?

(a) $CH_3CH_2CH_2CH_2OH$ (b) $CH_3CH_2\underset{\underset{OH}{|}}{CH} - CH_3$ (c) $(CH_3)_3COH$

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29. Arrange the halide ions in order of increasing basicity and nucleophilicity.

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30. In terms of Lewis concept, categorise the reaction site C of RX.

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31. Does the rates of the reaction depend on the amount of δ^+ on the attacked C of RX?

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32. Supply formulae for the organic products from the reaction of $CH_3C \equiv C^- Na^+ + CH_3CH_2CH_2Cl$

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33. Supply formulae for the organic products from the reaction of $CH_3CHCl.\,CH_2CH_3 + NaOH(aq)$

Watch Video Solution

34. Supply formulae for the organic products from the reaction of $(CH_3)_2CHO^-\,Na^+ + CH_3CH_2CH_2Cl$

Watch Video Solution

35. Give the structures of the main organic substitution products expected from the reaction of 1-bromobutane with $(CH_3)_3N$

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36. Give the structures of the main organic substitution products expected from the reaction of 1-bromobutane with CH_3COOAg

Watch Video Solution

37. Give the structures of the main organic substitution products expected from the reaction of 1-bromobutane with $LiAlH_4$

Watch Video Solution

38. Give reagents (inorganic or organic), needed to convert benzyl bromide into Benzyl iodide.

Watch Video Solution

39. Give reagents (inorganic or organic), needed to convert benzyl bromide into benzyl ethyl ether.

Watch Video Solution

40. Give reagents (inorganic or organic), needed to convert benzyl bromide into benzyl alcohol

Watch Video Solution

41. Give reagents (inorganic or organic), needed to convert benzyl bromide into benzyl cyanide

Watch Video Solution

42. Give reagents (inorganic or organic), needed to convert benzyl bromide into benzyl acetate

Watch Video Solution

43. Give reagents (inorganic or organic), needed to convert benzyl bromide into (nitromethyl) benzene

Watch Video Solution

44. Give reagents (inorganic or organic), needed to convert benzyl bromide into tri-n-butyl benzyl ammonium bromide.

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45. What is meant by plane polarized light?

Watch Video Solution

46. What is optical rotation ?

Watch Video Solution

47. Define specific rotation.

Watch Video Solution

48. What is meant by chiral or asymmetric carbon?

Watch Video Solution

49. What is meant by centre of symmetry?

Watch Video Solution

50. What is meant by n-fold axis of symmetry?

Watch Video Solution

51. What is the condition of achirality?

Watch Video Solution

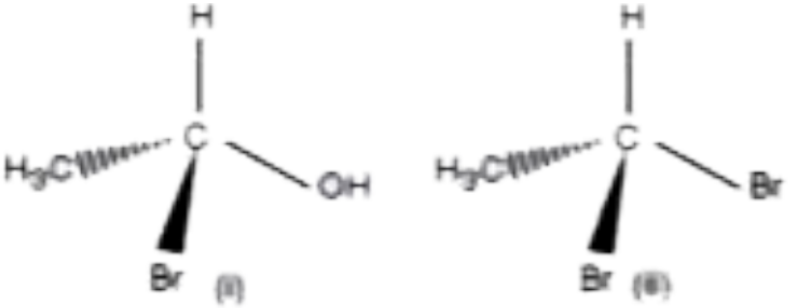
52. What is meant by chirality of molecules ?

Watch Video Solution

53. Name the instrument used for measuring specific rotation.

Watch Video Solution

54. Identify chiral and achiral molecules in each of the following pairs of compounds.



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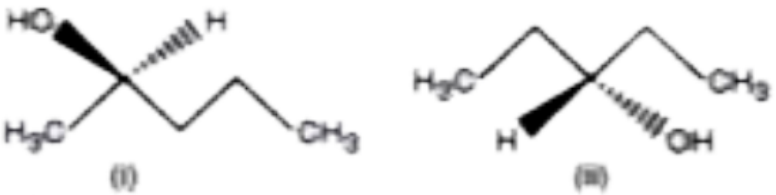
55. Identify chiral and achiral molecules in each of the following pairs of compounds.



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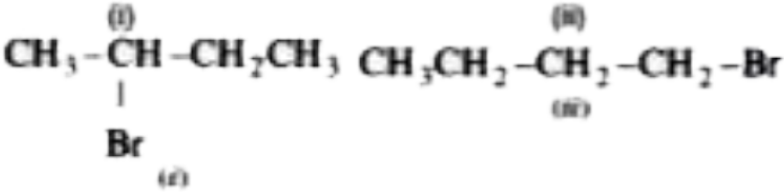
56. Identify chiral and achiral molecules in each of the following pairs of compounds.



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57. An alkyl halide having molecular formula C_4H_9Cl is optically active. What is its structure?

Watch Video Solution

58. Identify and indicate the presence of chirality, if any in the following molecule. How many stereoisomers are possible for those containing chiral centres? 3-Bromopent-1-ene.

Watch Video Solution

59. Draw the structural isomer of $C_3H_6Cl_2$ which can exhibit optical isomerism.

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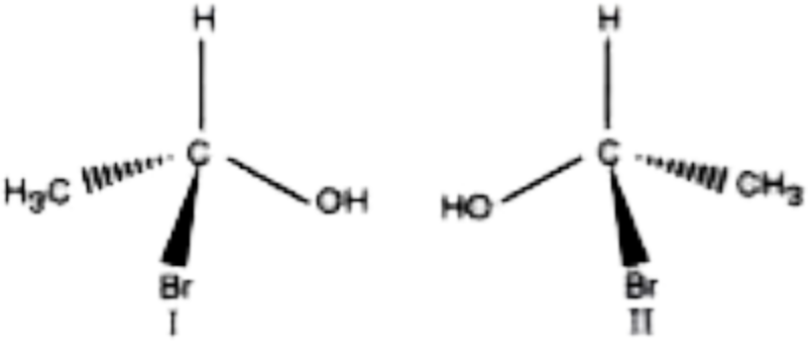
60. What is meant by racemic mixture ?

Watch Video Solution

61. What is meant by resolution?

Watch Video Solution

62. Substance A is 1:1 mixture of two compounds I and II:



Will the mixture show optical activity ?

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63. Arrange the following in the order of their increasing reactivity in nucleophilic substitution reactions.

$CH_3F, CH_3Cl, CH_3Br, CH_3I$

Watch Video Solution

64. Identify A and B in the $CH_3CH_2CH_2Br \xrightarrow{\text{alc. KOH}} A \xrightarrow{HBr} B.$

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65. Identify A and B in the $CH_3Br + Mg(\text{ether}) \rightarrow A \xrightarrow{H_2O} B.$

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66. Give reasons:

iodoform is obtained by the reaction of acetone with hypoiodite but not with iodide ion.

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67. RCI is treated with Li in ether solution to form R-Li. R-Li reacts with H_2O to form isopentane. RCI also reacts with Na to form 2,7-dimethyloctane. What is the structure of RCI?

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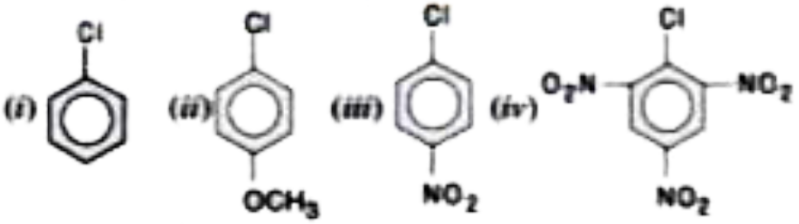
68. Arrange the following compounds in order of increasing reactivity towards nucleophilic substitution:



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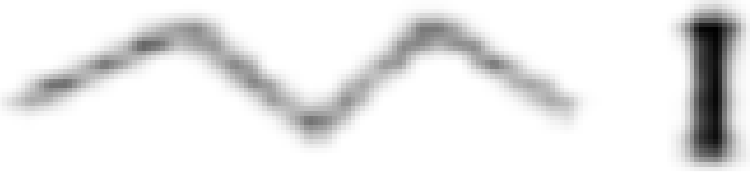
69. In the following pair of halogen compounds which would undergo S_{N^2} reaction faster?



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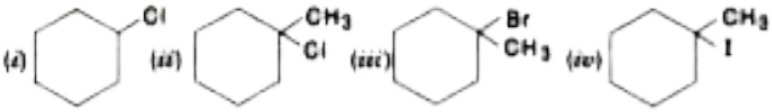
70. Arrange the following halides in order of increasing S_N^2 reactivity:

$CH_3Cl, CH_3Br, CH_3CH_2Cl, (CH_3)_2CHCl.$

Watch Video Solution

71. Predict the order of reactivity of the following compounds in S_{N^1} reactions :



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72. How will you distinguish between 1-bromopropane and allyl bromide ?

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73. Write a chemical reaction in which the iodide ion replaces the diazonium group in a diazonium salt.

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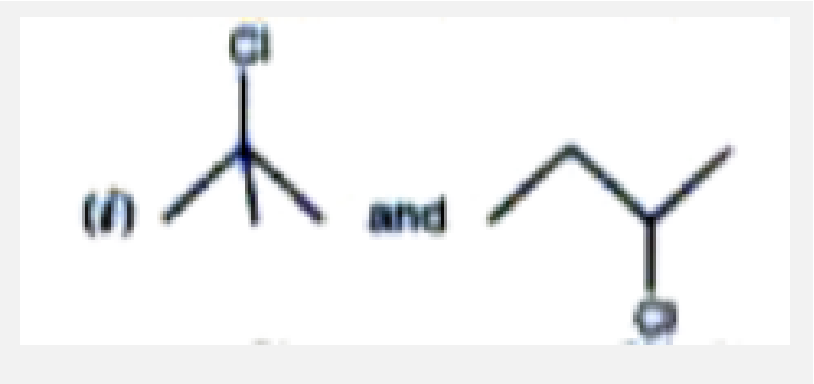
74. In each of the following pairs of compounds, identify the compound which will undergo Sn1 reaction faster?



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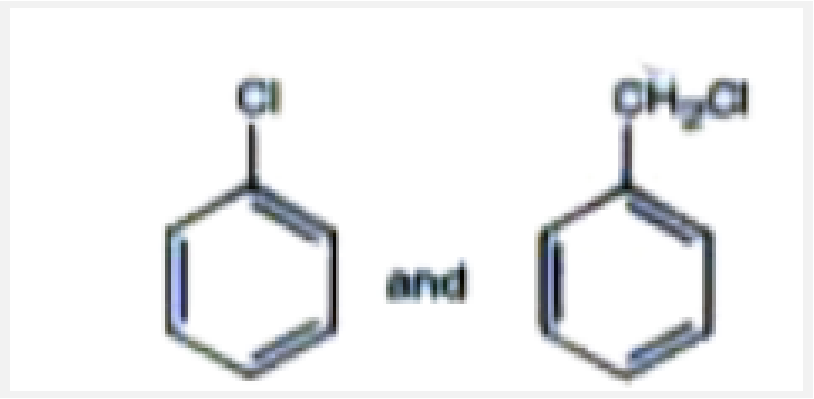
75. In each of the following pairs of compounds, identify the compound which will undergo Sn1 reaction faster?



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76. (i)State one use each of DDT and iodoform.

(ii) Which compound in the folloeing couples will react faster in `S_(N)2 displacement and why?

(a)1-Bromopentane or2-bromopentane

(b) 1-Bromo -2 methylbutane or 2-bromo-2-methylbutane.

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77. Explain why in pair, $(CH_3)_3CCl$ and CH_3Cl, CH_3Cl will react faster in S_{N^2} reactions with OH^-.

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78. Which will have a higher boiling point :

1-Chloropentane or 2-Chloro-2-methylbutane?

Watch Video Solution

79. How will you convert methyl chloride into ethyl chloride ?

Watch Video Solution

80. Identify A and B in each of the following processes.

$$CH_3CH_2Cl \xrightarrow{NaCN} A \xrightarrow[Ni/H_2]{\text{Reduction}} B$$

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81. Assertion: Chloroform is stored in dark coloured bottles.

Reason: Chronic chloroform exposure may cause damage to the liver and kidneys.

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82. State One use each of DDT and iodoform.

Watch Video Solution

83. How will you convert benzyl chloride to benzyl alcohol ?

Watch Video Solution

Exercise Part Ii Descriptive Questions Short Answer Questions

1. Although haloalkanes are polar in nature yet they arinsoluble in water. Explain.

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2. The boiling point of bromoethane is higher than that of chloroethane. Explain.

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3. The dipole moment of chloroethane is higher than that of chlorobenzene. Explain.

Watch Video Solution

4. With the help of chemical equations show how will you convert: Methyl bromide to acetic acid.

Watch Video Solution

5. With the help of chemical equations show how will you convert: Chlorobenzene to toluene.

Watch Video Solution

6. Give a brief account of the following with one example of Friedel-Crafts reaction.

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7. Give a brief account of the following with one example of each: Sandmeyer reaction.

Watch Video Solution

8. How may methyl bromide be preferentially converted to methylcyanide and methyl isocyanide ?

Watch Video Solution

9. Starting from methyl iodide, how will you prepare nitromethane ? Write the complete reaction involved.

Watch Video Solution

10. Starting from methyl iodide, how will you prepare methyl nitrite ?

Write the complete reaction involved.

Watch Video Solution

11. Identify and indicate the presence of centre of chirality, if any, in the following molecule. How many stereoisomers are possible for those containing chiral centre ?

1,2-dichloropropane.

Watch Video Solution

12. Identify and indicate the presence of chirality, if any in the following molecule. How many stereoisomers are possible for those containing chiral centres? 3-Bromopent-1-ene.

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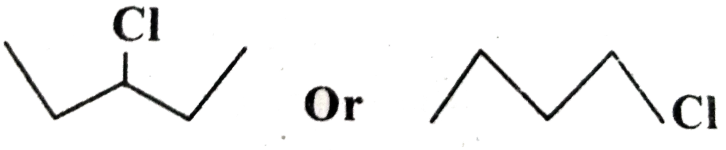
13. (i) Why are haloalkanes more reactive towards nucleophilic substitution reaction than haloarenes ?

(ii) Which one of the following two substance undergoes S_N1 reaction faster and why ?



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14. With the help of chemical equations, show how will you convert 1-propanol to 2-bromopropane.

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15. With the help of chemical equations, show how will you convert 2-Bromopropane to 1-bromopropane.

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16. How will you convert ethyl bromide into ethane.

Watch Video Solution

17. How will you convert ethyl bromide into butane.

Watch Video Solution

18. How will you convert ethyl bromide into propanoic acid.

Watch Video Solution

19. How will you convert ethyl bromide into ethoxyethane.

Watch Video Solution

20. Complete the reaction

$CH_3CH = CH_2 + HBr \rightarrow$

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21. Complete the reaction

$CH_3CH = CH_2 + HBr \xrightarrow{\text{Peroxide}}$

Watch Video Solution

22. An organic compound 'A' on treatment with KCN gave another compound B which on hydrolysis with dil. HCI gave acetic acid. Identify A.

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23. An ethereal solution of an alkyl halide 'A' when heated with sodium gave 2,3-dimethylbutane. Identify 'A'.

Watch Video Solution

24. Chloro derivative of an organic compound 'X' on reduction with zinc-copper couple gave a hydrocarbon (C_6H_{12}). Ethereal solution of 'X' when heated with sodium gave 2,2,5, 5-tetramethylhexane. Identify the compound 'X'.

Watch Video Solution

25. Complete the reaction :

$C_2H_5Cl + KOH(aq) \rightarrow$

Watch Video Solution

26. Complete the reaction : $\ldots + PBr_3 \rightarrow 3C_2H_5Br + \ldots$

Watch Video Solution

27. Complete the reaction : $C_2H_5I... = C_2H_5OC_2H_5 + NaI$

Watch Video Solution

28. What is an S_{N^1} mechanism ? Give an example of a reaction following an S_{N^1}mechanism and explain why the mechanism is considered to be S_{N^1}.

Watch Video Solution

29. Consider the equation :

$CH_3CH_2Cl \xrightarrow{aq.NaOH} CH_3CH_2OH$

Which of these reactions follow S_{N^1}mechanism and which the S_{N^2} mechanism ?

Watch Video Solution

30. Consider the equation :

$(CH_3)_3CCl \xrightarrow{aq.NaOH} (CH_3)_3COH$

Which of these reactions follow S_{N^1}mechanism and which the S_{N^2} mechanism ?

Watch Video Solution

31. Give a brief account of the following with one example of Friedel-Crafts reaction.

Watch Video Solution

32. Give a brief account of the following with one example of Wurtz reaction.

Watch Video Solution

33. Give a brief account of the following with one example of Markownikov's rule.

Watch Video Solution

34. What is the name and formula of the product obtainedwhen hydrogen chloride enters into electrophilic reaction with propene?

(ii) Classify the following reaction as S_{N^1}, S_{N^2}, E_1 or E_2.

(a) A second order reaction, first order in each reactant between an alkyl halide and alkali to give an alcohol.

(b) The formation of an olefin from an alkyl halide and alkali, the reaction being first order in each reactant.

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35. Write balanced equation using structural formula wherever relevant and name the products in the reactions taking place when benzene is

treated with methyl chloride in the presence of anhydrous aluminium chloride.

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36. Write the equations for the preparations of 1-iodo-butane from: 1-Butanol.

Watch Video Solution

37. Write the equations for the preparation of 1-iodobutane from

(i) 1-butanol , (ii) 1-chlorobutane , (iii) but-1-ene.

Watch Video Solution

38. Write the equations for the preparation of 1-iodobutane from

(i) 1-butanol , (ii) 1-chlorobutane , (iii) but-1-ene.

Watch Video Solution

39. What is Sandmeyer reaction ? Illustrate with a suitable example.

Watch Video Solution

40. How will you convert ?

Propyl chloride to propylamine.

Watch Video Solution

41. How will you convert ?

$C_2H_5OH \text{ to } C_2H_5Cl$

Watch Video Solution

42. How will you convert ?

n-Propyl bromide into isopropyl bromide.

Watch Video Solution

43. How is ethyl iodide converted into diethyl ether.

Watch Video Solution

44. How is ethyl iodide converted into ethylene.

Watch Video Solution

45. Give at least one characteristic test which can distinguish between 1, 1-Dibromoethane and 1,2-dibromoethane.

Watch Video Solution

46. Give at least one characteristic test which can distinguish between Chlorobenzene and n-hexylchloride.

Watch Video Solution

Watch Video Solution

47. Give at least one characteristic test which can distinguish between Bromobenzene and benzyl bromide.

Watch Video Solution

48. Account for the following:

Aryl cyanides cannot be formed by the reaction of aryl halides and sodium cyanide.

Watch Video Solution

49. How can the orthonitrochlorobenzene be obtained from benzene? Write chemical equation for the reaction involved.

Watch Video Solution

50. How can 2, 3-dimethylbutane be obtained from 2-iodo propane?

Watch Video Solution

51. Explain the formation of two products in the following reactions:

$CH_3CH = CHCH_2Cl + H_2O \rightarrow CH_3CH = CH.CH_2OH + CH_3CH(C$

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52. Which compound in each of the following pairs will react faster in S_{N^2} reaction with HO^- ?

CH_3Br or CH_3I

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53. Which compound in each of the following pairs will react faster in S_{N^2} reaction with HO^- ? $(CH_3)_3CCl$ or $(CH_3)_2CHCl$

Watch Video Solution

54. Which compound in each of the following pairs will react faster in S_{N^2} reaction with HO^- ? $CH_2 = CHBr$ or $CH_2 = CH - CH_2Br$.

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55. Predict the order of reactivity of the following compounds in dehydrohalogenation :

$CH_3CH_2CH_2CH_2Cl, (CH_3)_2CHCH_2Cl, (CH_3)_2CHCH_2Br, CH_3CH(Br$

Watch Video Solution

56. Predict the order of reactivity of the following compounds in dehydrohalogenation :

$CH_3CH(Br)CH_3, CH_3CH_2CH_2Br, (CH_3)_2 - CH - CH_2Br, (CH_2)_3C$

.

Watch Video Solution

57. What are ambident nucleophiles ? Example with an example.

Watch Video Solution

58. Arrange the following compounds in increasing order of S_{N^1} reactivity.

$ClCH_2 = CHCH_2CH_3, CH_3C(Cl) = CHCH_2CH_3, CH_2 = CHCH_2CH$

.

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59. Arrange the following compounds in increasing order of S_{N^1} reactivity.

$CH_3CH_2Br, CH_2 = CHCH(Br)CH_3, CH_3CH(Br)CH_3$

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60. Arrange the following compounds in increasing order of S_{N^1} reactivity.

$(CH_3)_3CCl, C_6H_5C(CH_3)_2Cl, CH_3CH_2CH_2Cl.$

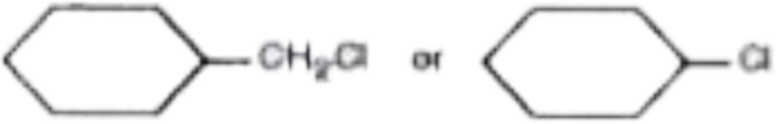
Watch Video Solution

61. Complete the reaction

$C_6H_5N_2Cl + KI \rightarrow$ ....

Watch Video Solution

62. Which one in the following pairs of substances undergoes S_{N^2} substitution reaction faster and why?



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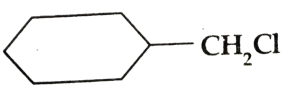
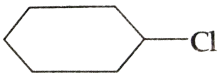
63. Which ones in the following pairs of substances undergoes S_N2 substitution reaction faster and why ?

(i)  or 

(ii)  or 

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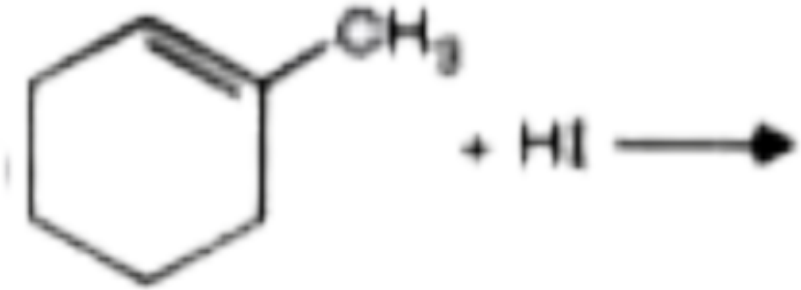
64. Complete the reaction



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65. Complete the reaction

$CH_3CH_2CH = CH_2 + HBr$

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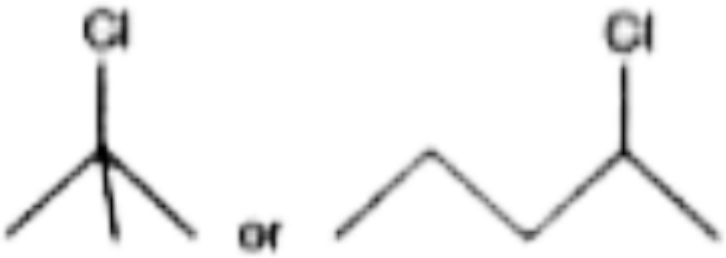
66. Which one of the following pairs undergoes Snl substitution reaction faster and why?



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67. Which one of the following pairs undergoes Snl substitution reaction faster and why?

Watch Video Solution

68. How would you differentiate between S_{N^1} and S_{N^2} mechanism of substitution reactions ? Give one example of each.

Watch Video Solution

69. How alkanes easily dissolve in organic solvents, why?

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70. Answer the following:

(i) Haloalkanes easily dissolve in organic solvents, why?

(ii) What is known as a racemic mixture ? Give an example.

(iii) Of the two bromoderivatives, $C_6H_5CH(CH_3)Br$ and $C_6H_5CH(C_6H_5)Br$, which one is more reactive in S_{n^1} substitution reaction and why?

Watch Video Solution

71. Of the two bromoderivatives, $C_6H_5CH(CH_3)Br$ and $C_6H_5CH(C_6H_5)Br$, which one is more reactive in SN' substitution reaction and why?

Watch Video Solution

72. Rearrange the compounds of each of the following sets in order of reactivity towards SN_2 displacement:

2-Bromo-2-methyl butane, 1-Bromo-pentane, 2-Bromopentane.

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73. Rearrange the compounds of each of the following sets in order of reactivity towards SN_2 displacement:

1-Bromo-2-methyl butane, 2-Bromo-2-methyl butane, 3-Bromo-2-methyl butane.

Watch Video Solution

74. Rearrange the compounds of each of the following sets in order of reactivity towards S_{N^2} displacement: 1-Bromobutane, 1-Bromo-2, 2-dimethylpropane, 1-Bromo-2-methylbutane

Watch Video Solution

75. Write the mechanism of the following reaction:

nBuBr + KCN $\xrightarrow{EtOH - H_2O}$ nBuCN

Watch Video Solution

76. Explain why

(i) the dipole moment of chlorobenzene is lower than that of cyclohexyl chloride?

(ii) alkyl halides, though polar, are immiscible with water?

(iii) Grignard reagents should be prepared under anhydrous conditions?

Watch Video Solution

77. How would you obtain chloroform from ethanol?

Watch Video Solution

78. How would you obtain chloroform from propanone ?

Watch Video Solution

79. What is carbylamine reaction and what is its significance ?

Watch Video Solution

80. What happens when chloroform is treated with zinc and hydrochloric acid ?

Watch Video Solution

81. What happens when chloroform is treated with boiling aqueous NaOH ?

Watch Video Solution

82. What happens when chloroform is treated with conc. HNO_3?

Watch Video Solution

83. How is iodoform prepared from acetone ?

Watch Video Solution

84. What happens when iodoform is heated with silver powder

Watch Video Solution

85. What happens when :

Iodoform is boiled with alcoholic or conc, aqueous KOH ?

Watch Video Solution

86. What happens when :

Chloroform is condensed with acetone in presence of KOH ?

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87. What is freon ? What are its important uses and environmental effects ?

Watch Video Solution

88. How is chlorobenzene prepared in the laboratory and on a large scale ?

Watch Video Solution

89. Why is chlorobenzene less reactive than alkyl halides?

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90. Althrough chlorine is an electron withdrawing group, yet it is ortho-para-directing in electrophilic aromatic substitution reactions. Explain why it is so ?

Watch Video Solution

91. How will you distinguish between Chlorobenzene and benzyl chloride.

Watch Video Solution

92. Write a chemical test to distinguish between :

Chloroform and carbon tetrachloride.

Watch Video Solution

93. Why is methyl chloride hydrolysed more readily than chlorobenzene?

Watch Video Solution

94. What is D.D.T. ? What are its uses and environmental effects ?

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Exercise Part Ii Descriptive Questions Long Answer Questions

1. How will you convert ethyl bromide into ethane.

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2. How will you get the following compounds from ethyl bromide? n-Butane.

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3. How will you get the following compounds from ethyl bromide? Ethene.

Watch Video Solution

4. How will you get the following compounds from ethyl bromide? Ethanol .

Watch Video Solution

Watch Video Solution

5. How will you get the following compounds from ethyl bromide? Diethyl ether.

Watch Video Solution

6. How will you get the following compounds from ethyl bromide? Ethyl acetate.

Watch Video Solution

7. What happen when ethyl bromide reacts with KCN.

Watch Video Solution

8. What happen when ethyl bromide reacts with $AgCN$.

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9. What happen when ethyl bromide reacts with $AgNO_2$.

Watch Video Solution

10. What happen when ethyl bromide reacts with KNO_2.

Watch Video Solution

11. What happen when ethyl bromide reacts with Zinc.

Watch Video Solution

12. What happen when ethyl bromide reacts with Na.

Watch Video Solution

13. Complete the reaction :

$C_2H_5Cl + Na \rightarrow$

Watch Video Solution

14. Complete the reaction :

$CH_3CH_2CH_2Cl^{\text{alcoholic KOH}}$

Watch Video Solution

15. Complete the reaction :

Methyl bromide + Potassium cyanide to overset("Hydrolysis")to ?`

Watch Video Solution

16. Complete the reaction :

$C_2H_5ONa + Br.\,C_2H_5 \rightarrow$

Watch Video Solution

17. Complete the reaction :

$(CH_3)_2CHBr + alc.\ KOH \rightarrow$

Watch Video Solution

18. How are the following conversions carried out Methyl bromide to ethyl bromide.

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19. How are the following conversions carried out Propene to 1-bromopropane.

Watch Video Solution

20. How are the following conversions carried out 2-Propanol to 1-bromopropane.

Watch Video Solution

21. How will you bring about the following conversions ?

Ethyl bromide to ethanamine

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22. How are the following conversions carried out 2-chlorobutane to butan-2-ol.

Watch Video Solution

23. How are the following conversions carried out Toluene into benzyl chloride.

Watch Video Solution

24. How are the following conversions carried out Benzene into benzene hexachloride.

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25. Conversion of Chlorobenzene into aniline

Watch Video Solution

26. How will you bring about the following conversions ?

Aniline to bromobenzene

Watch Video Solution

27. How are the following conversions carried out Aniline into fluorobenzene.

Watch Video Solution

28. How are the following conversions carried out Aniline to chlorobenzene.

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29. Outline the preparation of the following compounds using a nucleophilic substitution reaction : $CH_3OC(CH_3)_3$

Watch Video Solution

30. Outline the preparation of the following compounds using a nucleophilic substitution reaction : $CH_3C \equiv CCH_2CH_3$

Watch Video Solution

31. Outline the preparation of the following compounds using a nucleophilic substitution reaction : $CH_3CH_2CH_2N(CH_3)_2$

Watch Video Solution

32. Outline the preparation of the following compounds using a nucleophilic substitution reaction : $C_6H_5CH_2OCOCH_3$.

Watch Video Solution

33. Outline the preparation of the following compounds using a nucleophilic substitution reaction : $CH_3CH_2CH_2CH_2NO_2$.

Watch Video Solution

34. Outline the preparation of the following compounds using a nucleophilic substitution reaction : $C_6H_5CH_2N=C$

Watch Video Solution

35. Outline the preparation of the following compounds using a nucleophilic substitution reaction : $CH_3CH_2CH_2CN$

Watch Video Solution

36. Outline the preparation of the following compounds using a nucleophilic substitution reaction : $CH_3CH_2-O-N=O$

Watch Video Solution

37. Explain why

(i) the dipole moment of chlorobenzene is lower than that of cyclohexyl

chloride?

(ii) alkyl halides, though polar, are immiscible with water?

(iii) Grignard reagents should be prepared under anhydrous conditions?

Watch Video Solution

38. Explain why

(i) the dipole moment of chlorobenzene is lower than that of cyclohexyl chloride?

(ii) alkyl halides, though polar, are immiscible with water?

(iii) Grignard reagents should be prepared under anhydrous conditions?

Watch Video Solution

39. What are ambident nucleophiles ? Example with an example.

Watch Video Solution

40. Differentiate between S_N1 and S_N2 mechanisms and Give examples.

Watch Video Solution

41. What is meant by E_1 and E_2 reactions ? Discuss the two mechanisms by taking suitable examples.

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42. Write any five chemical properties of alkyl halides to show their importance.

Watch Video Solution

43. Describe the synthetic reactions of alkyl halides, illustrating how a wide variety of organic compounds can be synthesised from them?

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44. How is chlorobenzene prepared in the laboratory and on a large scale.

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45. How is chlorobenzene obtained from Aniline.

Watch Video Solution

46. How is chlorobenzene prepared in the laboratory and on a large scale.

Watch Video Solution

47. How chlorobenzene can be converted into benzene.

Watch Video Solution

48. How can the following conversion be brought about?

Chlorobenzene to phenol.

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49. How chlorobenzene can be converted into toluene.

Watch Video Solution

50. How chlorobenzene can be converted into benzoic acid.

Watch Video Solution

51. How chlorobenzene can be converted into diphenyl.

Watch Video Solution

52. How will you distinguish between methanol and ethanol.

Watch Video Solution

53. How will you distinguish between Chlorobenzene and n-propyl chloride.

Watch Video Solution

54. How will you distinguish between Ethyl bromide and bromobenzene.

Watch Video Solution

55. How will you distinguish between Chlorobenzene and benzyl chloride.

Watch Video Solution

56. Haloarenas are less reactive than haloalkanes and haloalkenes. Explain.

Watch Video Solution

57. Account for the Like chlorobenzene, vinyl chloride too has low reactivity.

Watch Video Solution

58. Account for the Para-dichlorobenzene has low solubility in benzene as compared to orthodichlorobenzene.

Watch Video Solution

59. Why are haloarenes more stable than haloalkanes andundergo electrophilic substitution at ortho and para positions?

Watch Video Solution

60. How will you synthesise the following from ethyl chloride?

Propionic acid.

Watch Video Solution

61. Conversion of Ethyl chloride into n-Propylamine

Watch Video Solution

62. How will you synthesise the following from ethyl chloride?

n-Butane.

Watch Video Solution

63. How is chlorobenzene prepared in the laboratory and on a large scale ?

Watch Video Solution

64. Discuss the important physical and chemical properties of chlorobenzene. Give its important uses.

Watch Video Solution

65. Give the uses and physiologcal effects of dichloromethane, freon-12, DDT, iodoform and carbon tetrachloride.

Watch Video Solution

Isc Examination Questions

1. How can the following conversion be brought about?

Chlorobenzene to phenol.

Watch Video Solution

2. How is iodoform prepared from ethanol? Give balanced equation.

Watch Video Solution

3. Give balanced equations for the following name reaction Wurtz - Fittig reaction.

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4. Give balanced equations for the following name reaction Carbylamine reaction.

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Multiple Choice Questions

1. Halogenation of alkane gives:

A. Only required alkyl halide

B. Alkyl halide and unreacted halogen

C. A mixture of mono-, di-, tri-and tetra-halogen derivatives

D. Alkyl halide and unreacted alkane

Answer: C

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2. Alkyl halides undergo:

A. Electrophilic substitution reactions

B. Electrophilic addition reactions

C. Nucleophilic substitution reactions

D. Nucleophilic addition reactions

Answer: C

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3. The conversion of an alkyl halide into an alcohol by aqueous NaOH is classified as:

A. A dehydrohalogenation reaction

B. A substitution reaction

C. An addition reaction

D. A dehydration reaction

Answer: B

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4. Which alkyl halides react most readily by nucleophilic substitution ?

A. CH_3CH_2Cl

B. CH_3CH_2I

C. CH_3CH_2Br

D. CH_3CH_2F

Answer: B

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5. Ethylene chloride and ethylidene chloride are isomers. Identify the correct statements.

A. Both the compounds form same product on treatment with alcoholic KOH.

B. Both the compounds form same product on treatment with aq. NaOH.

C. Both the compounds form same product on reduction

D. Both the compounds are optically active.

Answer: A

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6. What is the IUPAC name of $CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}} - CH_2Cl$?

A. 2-dimethylchloropropane

B. 1-chloro-2-dimethyl-pentane

C. 2,2-dimethyl-chlorobutane

D. 1-chloro-2, 2-dimethyl propane

Answer: D

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7. Which of the following compound has been suggested as causing depletion of the ozone layer in the upper stratosphere?

A. CH_4

B. CCl_2F_2

C. CF_4

D. CH_2Cl_2

Answer: B

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8. Which of the following reagent cannot be used to prepare an alkyl chloride from an alcohol?

A. $HCl + ZnCl_2$

B. $SOCl_2$

C. NaCl

D. PCl_5

Answer: C

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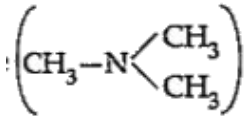
9. Chloromethane on treatment with excess of ammonia yields mainly:



A. N, N-Dimethylmethanamine

B. N-methylmethanamine $(CH_3 - NH - CH_3)$

C. Methanamine (CH_3NH_2)

D. Mixture containing all these in equal proportion

Answer: C

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10. Carbylamine test involves heating a mixture of:

A. Alcoholic KOH, methyl iodide, and sodium metal

B. Alcoholic KOH, methyl iodide, and primary amine

C. Alcoholic KOH, chloroform, and primary amine

D. Alcoholic KOH, methyl alcohol, and primary amine

Answer: C

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11. When chloroform is heated with aqueous NaOH, it gives:

A. Formic acid

B. Sodium formate

C. Acetic acid

D. Sodium acetate

Answer: B

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12. What should be the correct IUPAC name for diethylbromomethane?

A. 1-Bromo-1,1-diethylmethane

B. 3-Bromopentane

C. 1-Bromo-1-ethylpropane

D. 1-Bromopentane

Answer: B

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13. Conversion of ethyl bromide to ethylene is an example of:

A. Hydrohalogenation

B. Intramolecular dehydrohalogenation

C. Dehydration

D. Hydration

Answer: B

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14. The reaction, $2C_2H_5Br + 2Na \xrightarrow{\text{dry ether}} C_2H_5 - C_2H_5 + 2NaBr$ is an example of :

A. The Wurtz reaction

B. Sandmeyer's reaction

C. Aldol condensation

D. Williamson's reaction

Answer: A

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15. Grignard's reagent is prepared by the action of magnesium metal on:

A. Alcohol

B. Phenol

C. Alkyl halide

D. Benzene

Answer: C

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16. A primary alkyl halide would prefer to undergo:

A. S_N^1 reaction

B. S_N^2 reaction

C. a-Elimination

D. Racemisation

Answer: B

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17. The action of sodium on alkyl halide to form an alkane is called:

A. Grignard reaction

B. Wurtz coupling reaction

C. Isocyanide reaction

D. Halogenation reaction

Answer: B

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18. Identify the true statement for chloroform :

A. Its exposure causes cardiac damage

B. If immersed in chloroform, the skin gets sored.

C. Central nervous system remains unaffected of chloroform.

D. 700 ppm of chloroform causes dizziness

Answer: A

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19. Halogenation of alkanes is:

A. A reductive process

B. An oxidative process

C. An isothermal process

D. An endothermal process

Answer: B

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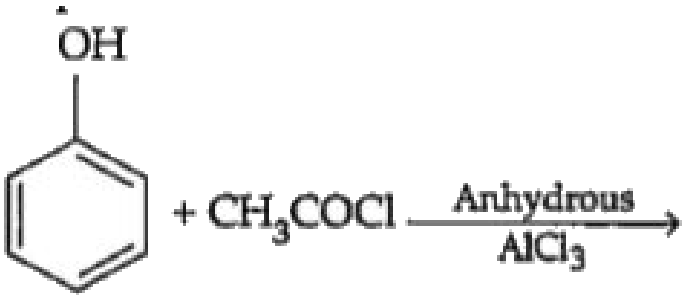
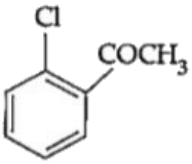
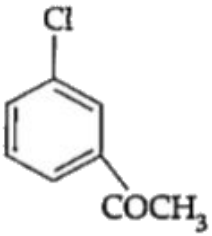
20. The major product of the following reaction is:



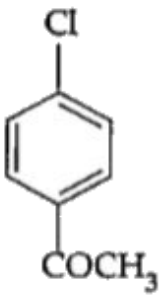
A.

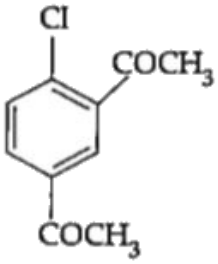


B.



C.



D. 

Answer: C

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21. 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

Answer: A

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22. Chlorobenzene on treatment with sodium in dry ether gives diphenyl.

The name of the reaction is:

A. Fittig reaction

B. Wurtz-Fittig reaction

C. Sandmeyer reaction

D. Gattermann reaction

Answer: A

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23. Identify A, B and C in the given sequence of reactions,

$$H_2C = CH_2 + \underset{B}{Br_2} \xrightarrow{A} \underset{C}{BrCH_2CH_2Br}$$

A. A-CCl_4 , B-Colourless , C-Reddish brown

B. A- CCl_4 , B- Reddish brown , C-Colourless

C. A-CBr_4 , B- Colourless , C-Reddish brown

D. A- CBr_4 , B-Reddish brown , C-Colourless

Answer: B

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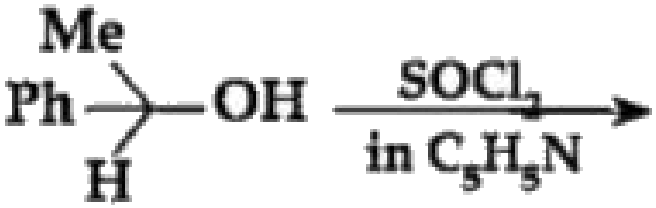

24.

Which statement is true for the above reaction?

A. Retention of configuration

B. Inversion of configuration

C. Inversion and retention both

D. None of the above

Answer: B

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25. The action of sodium on alkyl halide to form an alkane is called:

A. Grignard reaction

B. Wurtz coupling reaction

C. Isocyanide reaction

D. Halogenation reaction

Answer: B

View Text Solution

26. The gas obtained on heating iodoform with silver powder is:

A. Propane

B. Ethane

C. Ethyne

D. Ethene

Answer: C

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27. During the course of S_N^1 reaction, the intermediate species formed is:

A. A free radical

B. A carbanion

C. A carbocation

D. An intermediate complex

Answer: C

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28. The reaction : $CH_3Br + OH^- \rightarrow CH_3OH + Br^+$

The expected mechanism of the above reaction is:

A. S_N^1 reaction

B. S_N^2 reaction

C. S_E^1 mechanism

D. S_E^3 mechanism

Answer: B

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29. The reaction : $CH_3Br + OH^- \rightarrow CH_3OH + Br^+$

The above reaction is :

A. Elimination reaction

B. Nucleophilic addition reaction

C. Nucleophilic substitution reaction

D. Electrophilic substitution reaction

Answer: C

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Fill In The Blanks

1. Ethyl bromide on reaction with moist silver gives ..... as the main product. The well known refrigerant freon has the structure .....

A. Ethanol, CCl_2F_2

B. Ethanoic acid , CCl_4

C. Propanol , $CHCl_3$

D. Propanoic acid ,CH_4

Answer: A

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2. In S_N^1 mechanism ..... are involved as intermediate species. Formation of phenol from chlorobenzene is an example of aromatic substitution.

A. Anion, electrophilic

B. Ethanoic acid, nucleophilic

C. Carbocation, nucleophilic

D. Carbanion, electrophilic

Answer: C

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3. Bleaching powder, on treatment with ethanol or acetone gives ..... This is an example of ..... reaction. Butane nitrile can be prepared by heating ..... With alcoholic KCN.

A. Carbon tetrachloride, iodoform, ethanol

B. Freon, haloform, n-ethyl chloride

C. Iodine, iodoform, n-propanol

D. Chloroform, haloform, n-propyl chloride

Answer: D

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4. Vinyl chloride on reaction with dimethyl copper gives ..... . The trade name of carbon tetrachloride is .....

A. Propanol, pyrene

B. Propene, pyrene

C. Propane, pyrene

D. Propyne, pyrimidine

Answer: B

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5. BHC is commercially called .....Phenyl isocyanide is formed when chloroform is treated with ..... in the presence of alcoholic KOH.

A. Gropanol, Chloroform

B. Gammaxene, ethanol

C. Gammaxene, aniline

D. Gammaxene, benzene

Answer: C

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6. Vinyl chloride is ..... reactive than arylchloride. Preparation of chlorobenzene from benzene diazonium chloride and aqueous HCl is known as .....reaction.

A. Less, Gattermann reaction

B. Less, Sandmeyer's reaction

C. More, Wurtz's reaction

D. More, Wurtz-Fittig reaction.

Answer: A

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7. In alkyl halides, due to greater polarity as well as higher molecular mass, as compared to the parent hydrocarbon, the intermolecular .....and ..... of attraction are stronger in the halogen derivatives.

A. dipole-dipole and Van der Waal's forces.

B. Hydrogen bond and dipole-dipole forces.

C. Van der Waal's and hydrogen bond forces.

D. dipole-dipole and London forces.

Answer: A

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8. Nucleophilic reactions are the most useful classes of organic reactions of alkyl halides in which halogens are bonded to ..... hybridized carbon.

A. sp^2

B. sp^3

C. sp

D. None of the above

Answer: B

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9. The spatial arrangement of four groups (valences) around a central carbon atom is tetrahedral and if all the substituents attached to that carbon are different, and then such a carbon is called .....

A. Achiral

B. Chiral

C. Asymmetric

D. Symmetric

Answer: B

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Match

1. Match the columns :

Column I	Column II
1. Ammonical silver nitrate	(p) Tollen's reagent
2. DDT	(q) Insecticide
3. Freon	(r) Refrigerant
4. Iodoform	(s) Antiseptic
5. Grignard Reagent	(t) RMgX

A. 1-(p) , 2-(q) , 3-(s) , 4-(t) , 5-®

B. 1-(r) , 2-(t) , 3-(s) , 4-(q) , 5-(p)

C. 1-(s) , 2-(t) , 3-(p) , 4-(q) , 5-(r)

D. 1-(q) , 2-(p) , 3-(r) , 4-(s) , 5-(t)

Answer: A

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Reaction Based

1. Complete the following reaction and name the reaction :

..... + $3I_2 + 4KOH \rightarrow CHI_3 + CH_3COOK + 3KI + 3H_2O$

(a)CH_3COCH_3 , Iodoform reaction

(b)CH_3COOH , Haloform reaction

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2. Complete the reaction : $CH_3CH_2CH_2Cl + NaI \xrightarrow[\text{Heat}]{\text{Acetone}}$

(a)CH_3CHCH_3Na (b)$CH_2CH_2CH_2I$

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3. Complete the reaction : (a)

$$(CH_3)_3CBr + KOH \xrightarrow{\text{Ethanol, heat}} CH_3 - \overset{CH_3}{\underset{|}{C}} = CH_2 + KBr + H_2O$$

(b)$CH_3 - \underset{OH}{\underset{|}{C}}H - CH_2 - CH_3 + KBr$

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4. Complete the reaction : (a)

$$CH_3CH_2Br + KCN \xrightarrow{\text{Aq. Ethanol}} CH_3 - \overset{CH_3}{\underset{|}{C}} = CH_2 + KBr$$

(b) $CH_3CH_2CN + KBr$

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5. Complete the reaction : $C_6H_5ONa + C_2H_5Cl \rightarrow$

(a)$CH_3CH_2CH_2Cl + NaCl + H_2O$

(b)$C_6H_5 - O - C_2H_5 + NaCl$

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6. In the reaction .

$2C_2H_5Br + 2Na \xrightarrow{\text{dry ether}}$

The product formed will be :

A. $C_2H_5 - C_2H_5 + 2NaBr$

B. $C_2H_8 + HBr + NaBr$

C. $CH_2CH_2 + 2HBr + 2NaBr$

D. $C_2H_6 + 2NaBr + 2H_2O$

Answer: A

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7. In the reaction .

$$2C_2H_5Br + 2Na \xrightarrow{\text{dry ether}}$$

The above reaction is an example of :

A. Sandmeyer's reaction

B. The Wurtz reaction

C. Aldol condensation

D. Williamson's reaction

Answer: B

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8. Which of the following poisonous gas is formed when chloroform is exposed to light and air ?

A. Mustard gas

B. Carbon monoxide

C. Phosgene

D. Chlorine

Answer: C

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9. Assertion: $(CH_3)_3C-O-CH_3$ give $(CH_3)_3C-I$ and CH_3OH on treatment with HI.

Reason: The reaction occurs by S_N^1 mechanism.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true, but reason is not the correct explanation of assertion.

C. If assertion is true, but reason is false.

D. If both assertion and reason are false

Answer: A

View Text Solution

10. Assertion: Hydrogen iodide readily reacts with alkenes to form alkyl halides.

Reason: Aqueous hydrohalogen acids are used to prepare alkyl halides from alkenes.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true, but reason is not the correct explanation of assertion.

C. If assertion is true, but reason is false.

D. If both assertion and reason are false

Answer: C

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11. Assertion: $CHCI_3$ is stored in dark bottles.

Reason: $CHCl_3$ is oxidised in dark.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true, but reason is not the correct explanation of assertion.

C. If assertion is true, but reason is false.

D. If both assertion and reason are false

Answer: C

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12. Assertion: CCl_4 is a fire extinguisher.

Reason: CCl_4 is insoluble in water.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true, but reason is not the correct explanation of assertion.

C. If assertion is true, but reason is false.

D. If both assertion and reason are false

Answer: B

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13. Assertion: $CH_2 = CH - CH_2 - X$ is an example of allyl halides.

Reason: These are the compounds in which the halogen atom is bonded to an sp^2 hybridised carbon atom.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true, but reason is not the correct explanation of assertion.

C. If assertion is true, but reason is false.

D. If both assertion and reason are false

Answer: C

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14. Assertion: Alkylbenzene is not prepared by Friedel-Crafts alkylation of benzene.

Reason: Alkyl halides are less reactive than aryl halides.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true, but reason is not the correct explanation of assertion.

C. If assertion is true, but reason is false.

D. If both assertion and reason are false

Answer: B

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15. Assertion: Aryl halides cannot be prepared by replacement of hydroxyl group of phenol by halogen atom.

Reason: Phenols react with halogen acids violently.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true, but reason is not the correct explanation of assertion.

C. If assertion is true, but reason is false.

D. If both assertion and reason are false

Answer: C

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16. Assertion: Exposure of ultraviolet rays to human causes the skin cancer, disorder and disrupt the immune system.

Reason: Carbon tetrachloride is released into air it rises to atmosphere and deplets the ozone layer.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true, but reason is not the correct explanation of assertion.

C. If assertion is true, but reason is false.

D. If both assertion and reason are false

Answer: B

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17. Assertion: The boiling points of alkyl halides decrease in the order : $RI > RBr > RCI > RF$

Reason: The boiling points of alkyl chlorides, bromides and iodides are considerably higher than that of the hydrocarbon of comparable molecular mass.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true, but reason is not the correct explanation of assertion.

C. If assertion is true, but reason is false.

D. If both assertion and reason are false

Answer: B

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18. Assertion: Electron withdrawing groups in aryl halides increase the reactivity towards nucleophilic substitution.

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

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true, but reason is not the correct explanation of assertion.

C. If assertion is true, but reason is false.

D. If both assertion and reason are false

Answer: C

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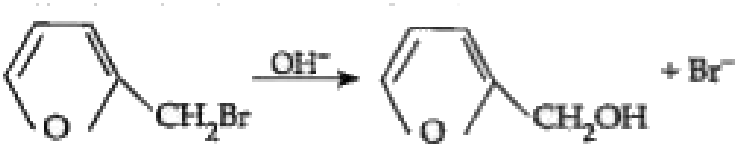
Source

1. Read the passage given below and answer the following questions: Haloalkanes and alcohols are important starting materials in the synthesis of compounds having other functional groups. Primary haloalkanes react with hydroxide ion to give alcohols, although we will see that elimination reactions compete with substitution for secondary and tertiary halides. When comparing alkanes and haloalkanes, we will see that haloalkanes have higher boiling points than alkanes containing the same number of carbons. London dispersion forces are the first of two types of forces that contribute to this physical property. London dispersion forces increase with molecular surface area. In comparing haloalkanes with alkanes, haloalkanes exhibit an increase in surface area due to the substitution of a halogen for hydrogen. The increase in surface area leads to an increase in London dispersion forces, which then results in a higher boiling point



Which of the following undergoes nucleophilic substitution exclusively by S_N^1 mechanism?

A. Benzyl Chloride

B. Ethyl chloride

C. Chlorobenzene

D. Isopropyl chloride

Answer: A

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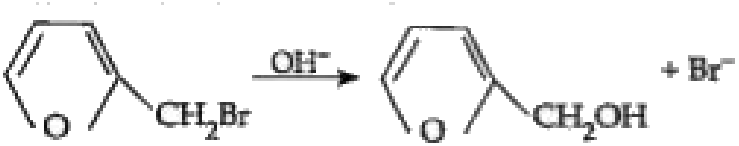
2. Read the passage given below and answer the following questions: Haloalkanes and alcohols are important starting materials in the synthesis of compounds having other functional groups. Primary haloalkanes react with hydroxide ion to give alcohols, although we will see that elimination reactions compete with substitution for secondary and tertiary halides. When comparing alkanes and haloalkanes, we will see that haloalkanes have higher boiling points than alkanes containing the same number of carbons. London dispersion forces are the first of two types of forces that contribute to this physical property. London

dispersion forces increase with molecular surface area. In comparing haloalkanes with alkanes, haloalkanes exhibit an increase in surface area due to the substitution of a halogen for hydrogen. The increase in surface area leads to an increase in London dispersion forces, which then results in a higher boiling point



Which of the following is most reactive towards S_N^1 reaction?

A. $C_6H_5CH(CH_3)Br$

B. $C_8H_5CH_2Br$

C. $C_6H_5CH(C_6H_5)Br$

D. $C_6H_5C(CH_3)C_6H_5Br$

Answer: D

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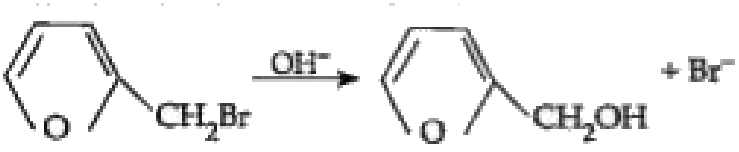
3. Read the passage given below and answer the following questions: Haloalkanes and alcohols are important starting materials in the synthesis of compounds having other functional groups. Primary haloalkanes react with hydroxide ion to give alcohols, although we will see that elimination reactions compete with substitution for secondary and tertiary halides. When comparing alkanes and haloalkanes, we will see that haloalkanes have higher boiling points than alkanes containing the same number of carbons. London dispersion forces are the first of two types of forces that contribute to this physical property. London dispersion forces increase with molecular surface area. In comparing haloalkanes with alkanes, haloalkanes exhibit an increase in surface area due to the substitution of a halogen for hydrogen. The increase in surface area leads to an increase in London dispersion forces, which then results in a higher boiling point



The addition of HBr is easiest in which one of the following substrates:

A. $CH_2 = CHCl$

B. $ClCH = CHCl$

C. $CH_3 - CH = CH_2$

D. $(CH_3)_2C = CH_2$

Answer: D

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4. Read the passage given below and answer the following questions: Haloalkanes and alcohols are important starting materials in the synthesis of compounds having other functional groups. Primary haloalkanes react with hydroxide ion to give alcohols, although we will see that elimination reactions compete with substitution for secondary and tertiary halides. When comparing alkanes and haloalkanes, we will see that haloalkanes have higher boiling points than alkanes containing the same number of carbons. London dispersion forces are the first of two types of forces that contribute to this physical property. London

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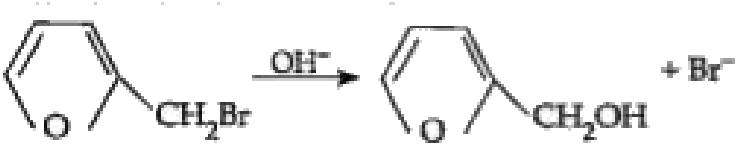

$(CH_3)_3CMgBr$ on reaction with D_2O produces:

A. $(CH_3)_3CD$

B. $(CH_3)_3COD$

C. $(CH_3)_3CD$

D. $(CD_3)_3OD$

Answer: A

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5. Classical molecular dynamics simulations with a polarizable force field were used to study adsorption of gas-phase alkyl halides to the surface of liquid water and their hydration properties in the interfacial environment. A systematic investigation has been performed for a set of monosubstituted alkyl chlorides, bromides and iodides of the alkyl chain length from one to five carbon atoms ($CnH_{2n+1}X$, n = 1-5, X = CI, Br, or I). All alkyl halides readily adsorb to the water surface and exhibit a strong preference for interfacial (partial) hydration. When adsorbed, the alkyl halide molecules reside primarily in the outermost region of the water-vapor interface. The (incomplete) hydration shell of the surface adsorbed methyl halide species is centered on the methyl end of the molecule, with the halogen atom largely exposed and facing away from water into the gas phase.

Assertion: There is a retention of configuration in 1-Chloro-2-methylbutane obtained from 2-methylbutan 1-ol.

Reason: The reactions where retention of configuration is observed do not preserve the integrity of the spatial arrangement of reactant.

A. Assertion and reason both are correct statements and reason is correct explanation for assertion

B. Assertion and reason both are correct statements but reason is not correct explanation for assertion.

C. Assertion is correct statement but reason is wrong statement

D. Both assertion and reason are wrong.

Answer:

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6. Classical molecular dynamics simulations with a polarizable force field were used to study adsorption of gas-phase alkyl halides to the surface of liquid water and their hydration properties in the interfacial environment. A systematic investigation has been performed for a set of monosubstituted alkyl chlorides, bromides and iodides of the alkyl chain length from one to five carbon atoms ($CnH_{2n+1}X$, n = 1-5, X = CI, Br, or I). All alkyl halides readily adsorb to the water surface and exhibit a strong

preference for interfacial (partial) hydration. When adsorbed, the alkyl halide molecules reside primarily in the outermost region of the water-vapor interface. The (incomplete) hydration shell of the surface adsorbed methyl halide species is centered on the methyl end of the molecule, with the halogen atom largely exposed and facing away from water into the gas phase.

Assertion: A mixture containing two enantiomeres in equal proportions will have zero optical rotation.

Reason: Rotation due to one isomer is cancelled by the rotation due to the other isomer.

A. Assertion and reason both are correct statements and reason is correct explanation for assertion

B. Assertion and reason both are correct statements but reason is not correct explanation for assertion.

C. Assertion is correct statement but reason is wrong statement

D. Both assertion and reason are wrong.

Answer:

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7. Classical molecular dynamics simulations with a polarizable force field were used to study adsorption of gas-phase alkyl halides to the surface of liquid water and their hydration properties in the interfacial environment. A systematic investigation has been performed for a set of monosubstituted alkyl chlorides, bromides and iodides of the alkyl chain length from one to five carbon atoms ($CnH_{2n+1}X$, n = 1-5, X = CI, Br, or I). All alkyl halides readily adsorb to the water surface and exhibit a strong preference for interfacial (partial) hydration. When adsorbed, the alkyl halide molecules reside primarily in the outermost region of the water-vapor interface. The (incomplete) hydration shell of the surface adsorbed methyl halide species is centered on the methyl end of the molecule, with the halogen atom largely exposed and facing away from water into the gas phase.

Assertion: Carbon-halogen bond in alkyl halide is a non-polar bond.

Reason: Halogen atoms are less electronegative than carbon.

A. Assertion and reason both are correct statements and reason is correct explanation for assertion

B. Assertion and reason both are correct statements but reason is not correct explanation for assertion.

C. Assertion is correct statement but reason is wrong statement

D. Both assertion and reason are wrong.

Answer:

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8. Classical molecular dynamics simulations with a polarizable force field were used to study adsorption of gas-phase alkyl halides to the surface of liquid water and their hydration properties in the interfacial environment. A systematic investigation has been performed for a set of monosubstituted alkyl chlorides, bromides and iodides of the alkyl chain length from one to five carbon atoms ($CnH_{2n+1}X$, n = 1-5, X = CI, Br, or I). All alkyl halides readily adsorb to the water surface and exhibit a strong

preference for interfacial (partial) hydration. When adsorbed, the alkyl halide molecules reside primarily in the outermost region of the water-vapor interface. The (incomplete) hydration shell of the surface adsorbed methyl halide species is centered on the methyl end of the molecule, with the halogen atom largely exposed and facing away from water into the gas phase.

Assertion: Reaction of aryl chlorides with iodine need an oxidising agent to be added in order to get a smooth reaction.

Reason: Reactions with iodine are irreversible in nature.

A. Assertion and reason both are correct statements and reason is correct explanation for assertion

B. Assertion and reason both are correct statements but reason is not correct explanation for assertion.

C. Assertion is correct statement but reason is wrong statement

D. Both assertion and reason are wrong.

Answer:

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9. Classical molecular dynamics simulations with a polarizable force field were used to study adsorption of gas-phase alkyl halides to the surface of liquid water and their hydration properties in the interfacial environment. A systematic investigation has been performed for a set of monosubstituted alkyl chlorides, bromides and iodides of the alkyl chain length from one to five carbon atoms ($CnH_{2n+1}X$, n = 1-5, X = CI, Br, or I). All alkyl halides readily adsorb to the water surface and exhibit a strong preference for interfacial (partial) hydration. When adsorbed, the alkyl halide molecules reside primarily in the outermost region of the water-vapor interface. The (incomplete) hydration shell of the surface adsorbed methyl halide species is centered on the methyl end of the molecule, with the halogen atom largely exposed and facing away from water into the gas phase.

Assertion: To obtain pure alkyl halides from alcohols thionyl chlorides are the reagents of choice.

Reason: Thionyl chloride reacts with alcohols to give alkyl halide.

A. Assertion and reason both are correct statements and reason is correct explanation for assertion

B. Assertion and reason both are correct statements but reason is not correct explanation for assertion.

C. Assertion is correct statement but reason is wrong statement

D. Both assertion and reason are wrong.

Answer:

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