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India's Number 1 Education App

CHEMISTRY

FOR IIT JEE ASPIRANTS OF CLASS 12 FOR CHEMISTRY

HALOALKANE AND HALOARENES

Example

1. Write structural formula and give their IUPAC names :

(i) Sec - butyl chloride (ii) Iso - butyl chloride

(iii) Allyl iodide (iv) 4 - Chloro - 2 - pentene

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2. Write the structural formula of all the molecular formula $C_5H_{11}Cl$ .Name each structure according to IUPAC system and classify them as

primary , secondary or tertiary chloride.

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3. Writer the IUPAC name of the following

(i) $CH_3CH = CHCH(CH_3)(Cl)$

(ii) $CH_2 = C(CH_3)CH(CH_3)(Cl)$

(iii) $CH_3CH = C(CH_3)CH(CH_3)(Cl)$

(iv) $CH_3CH = C(CH_3)CH_2Cl$

(v) $CH_3CH = CHCH_2Cl$

(vi) $CH_2 = C(CH_3)CH_2Cl$

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4. What will be the major product (A)

$$CH_3 - \overset{CH_3}{\underset{|}{C}}H - CH = CH_2 \xrightarrow{HBr} (A)$$

A. $CH_3 - \overset{CH_3}{\underset{|}{C}}H - CH = CH_2$

B. $CH_2 - \overset{\overset{CH_3}{|}}{CH} - CH_2 - CH_2 - Br$

C. $CH_3 - \overset{\overset{CH_3}{|}}{CH} - \underset{\underset{Br}{|}}{CH} - CH_3$

D. $CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{Br}{|}}{CH}} - CH_2 - CH_3$

Answer: D

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5. What will be the major product

$$CH_3 - \overset{\overset{CH_3}{|}}{C} = CH - CH_2 - CH_3 \xrightarrow{HI} (B):$$

A. $CH_3 - CH_2 - CH_2 - CH_2 - CH_2I$

B. $CH_3 - \underset{\underset{I}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_2 - CH_2 - CH_3$

C. $CH_3 - CH_2 - \underset{\underset{I}{|}}{CH} - CH_2 - CH_3$

D. $\underset{\underset{I}{|}}{CH_2} - CH_2 - CH_2 - CH_3$

Answer: B

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6. Write all possible structural isomer expected to be formed on free radical monochlorination of iosbutane

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7. Give the product of the following

(i) $C_6H_5CH = CH_2 + HBr \rightarrow$

$CH_3CH_2CH = CH_2 + HCl \rightarrow$

(iii) $C_6H_5CH_2CH = CH_2 + HBr \xrightarrow{\text{Peroxide}}$

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8. Which alkyl halide has maximum reactivity

A. CH_3CH_2Br

B. CH_3CH_2Cl

C. CH_3CH_2I

D. $CH_3CH_2CH_2Br$

Answer: 3

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9. Haloalkanes react with KCN to form alkyl cyanides as main product while AgCN forms isocyanides as the chief product. Explain.

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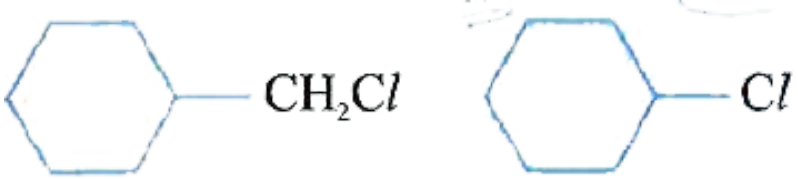
10. In the following pair of halogen compound, which would undergeo , S_N2 reaction faster .

(i) 

(ii) $CH_3CH_2CH_2CH_2I$ and $CH_3CH_2CH_2CH_2Cl$

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11. Predict the order of reactivity of the following compounds in S_N1 and S_N2 reactions:

(i) The four isomeric bromobutanes

(ii)

$C_6H_5CH_2Br, C_6H_5CH(C_6H_5)Br, C_6H_5CH(CH_3)Br, C_6H_5C(CH_3)(C_6H$

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12. $CH_3 - \overset{O}{\overset{||}{C}} - CH_3 + NaOH \xrightarrow[\Delta]{I_2} (A)$. A will be

A. CH_3OH

B. CHI_3

C. CH_3CI_3

D. $CH_3CH_2CI_3$

Answer: B

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13. Preparation of aryl halide by Benzene diazonium chloride and HBF_4 is called

A. Sandmeyer reaction

B. Gattermann reaction

C. Schiemann reaction

D. Friedal Craff reaction

Answer: 3

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14. Although chlorine is an electron withdrawing group, yet it is ortho-, para- directing in electrophilic aromatic substitution reactions. Why?

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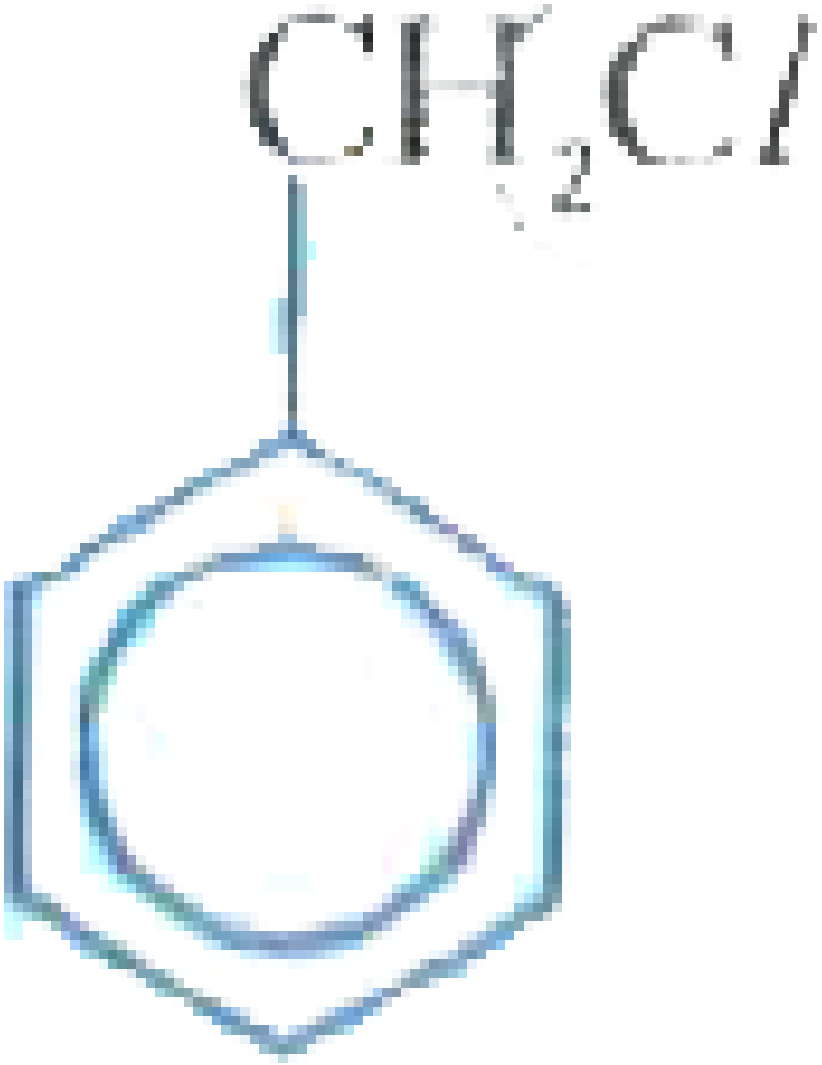
Evaluate Yourself 1

1. IUPAC name of



A. Benzylchloride

B. Phenyl chloride

C. Chlrophenyl methane

D. Chlorophenyl

Answer: A

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2. Allyl bromide is

A. $CH_2 = CH - Br$

B. $CH_2 = CH - CH_2 - Br$

C. $CH_3 - CH_2 - Br$

D. $CH_3 = CH = CH - Br$

Answer: B

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3. Tert - butyl chloride is

A. $CH_3 - CH_2 - \overset{\overset{Cl}{|}}{CH} - CH_3$

B. $CH_3 - CH_2 - CH_2 - CH_2 - Cl$

C. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_2 - Cl$

D. $CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - Cl$

Answer: D

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4. How many structural isomers are possible for C_4H_9Br ?

A. 4

B. 3

C. 2

D. 5

Answer: A

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5. How many primary halides are possible for $C_5H_{11}Br$?

A. 1

B. 2

C. 3

D. 4

Answer: D

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6. Which of the following alkyl halides is iso- butyl bromide ?

A. $CH_3CH_2CH(Br)CH_3$

B. $CH_3CH_2CH_2CH_2Br$

C. $H_3C - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - Br$

D. $H_3C - \underset{}{\overset{\overset{CH_3}{|}}{C}} - CH_2Br$

Answer: D

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Evaluate Yourself 2

1. $CH_3 - CH = CH_2 \xrightarrow{HCl} (A)$. A is in the given reaction will be

A. $CH_3 - \underset{\underset{Cl}{|}}{CH} - CH_3$

B. $CH_3 - CH_2 - CH_2 - Cl$

C. $Cl - CH_2 - CH = CH_2$

D. $CH_2 = CH_2$

Answer: A

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2. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_3 + \xrightarrow[hv]{Br_2} (A)$. (Major) . A will be

A. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_2Br$

B. $CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{Br}{|}}{CH}} = CH_2$

C. $CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_2}{|}}{CH}} - CH_3$

D. $CH_3 - \overset{\overset{|}{}}{CH} = H_2Br$

Answer: C

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3. C_2H_5Br can be obtained in the laboratory by the action of ethyl alcohol with :

A. KBr

B. NH_4Br

C. Br_2

D. KBr and H_2SO_4 (conc.)

Answer: D

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4. Which of the following reagents can be used to prepare an alkyl halide from an alcohol?

A. HCl + anhyd . $ZnCl_2$

B. NaCl

C. PCl_3

D. $SOCl_2$

Answer: B

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5. Benzyl choride can be perpared by reacting :

A. Toluene with Cl_2 in the presence of $FeCl_3$

B. Benzene with CH_3Cl in the presence of $AlCl_3$

C. Toluene with Cl_2 in the presence of sulight

D. Benzene with Cl_2 in the presence of $FeCl_3$

Answer: C

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Evaluate Yourself 3

1. For the reaction $C_2H_5OH + HX \xrightarrow{ZCl_2} C_2H_5X$, the decreasing order of reactivity of halogen acids is

A. $HCl > HCl > HBr$

B. $HI > HBr > HCl$

C. $HCl > HBr > HI$

D. $HBr > HI > HCl$

Answer: B

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2. $(CH_3)_2CHCl + NaI \xrightarrow{\text{Acetone}} (CH_3)_2CHI + NaCl$

The above reaction is known as :

A. Finkelstein reaction

B. Stephen's reaction

C. Wurtz reaction

D. Swart reaction

Answer: A

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3. Which of the following molecules has highest dipole moment ?

A. CH_3Cl

B. CH_2Cl_2

C. $CHCl_3$

D. CCl_4

Answer: A

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4. Arrange the following molecules has highest dipole moment ?

(i) CH_3Br (ii) CH_3CH_2Br

(iii) $CH_3CH_2CH_2Br$

(iv) $CH_3CH_2CH_2CH_2Br$

A. $(i) > (ii) > (iii) > (iv)$

B. $(iv) > (iii) > (ii) > (i)$

C. $(i) > (iii) > (ii) > (iv)$

D. $(iii) > (iv) > (i) > (ii)$

Answer: B

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5. In the preparation of alkyl halide from alkene and halogen which of the following reaction is involved

A. Free radical substitution

B. Nuclephilic addition

C. Electrophilie substitution

D. Nucleophilic substitution

Answer: A

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6. $C_2H_5OH + CaOCl_2 \xrightarrow{H_2O} (A)$. A will be

A. CH_3CHO

B. CH_3CH_2I

C. CH_3CH_2Cl

D. $CHCl_2$

Answer: D

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7. Ethylidene dibromide $\xrightarrow{\Delta} CH \equiv CH,$ A is

A. aq. KOH

B. alc. KOH

C. cone. H_2SO_4

D. All of these

Answer: B

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8. Iodoform test is not given by

A. 2 - pentanone

B. ethanol

C. ethanal

D. 3 - pentanone

Answer: C

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9. Freon used as refrigerant is

A. $CF_2 = CF_2$

B. CH_2F_2

C. CCl_2F_2

D. CF_4

Answer: C

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Evaluate Yourself 4

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

A. Fitting reaction

B. Wurtz-Fitting reaction

C. Sandmeyer reaction

D. Gattermann reaction

Answer: A

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2. Chlorination of toluene in the presence of light and heat followed by the treatment with aqueous KOH gives

A. o-cresol

B. m-cresol

C. p-cresol

D. benzyl alcohol

Answer: D

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3. Fridel-crafts' reaction of bromobenzene with methyl iodide gives

A. o- bromotoluene

B. p-bromotoluene

C. o-and p-bromotoluene

D. m-bromotoluene

Answer: C

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4. Gammeance is chemically known as

A. benzene hexachloride

B. hexachloro benzene

C. benzene hexabromide

D. hexabromo benzene

Answer: A

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

A. Fitting reaction

B. Wurtz-Fitting

C. Wurtz reaction

D. Sandmeyer reaction

Answer: A

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Check Your Grasp

1. Given IUPAC names of the following compounds

$(CH_3)_3C - Cl$ (ii) $CH_3 - \underset{\underset{C_2H_3}{|}}{CH} - CH_2Cl$

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2. Draw the bond line structures of the following compounds whose IUPAC names are given as under.

(i) 2-Bromobutane

(ii) 2- Bromo-2-methylpropane

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3. Write down the IUPAC names and structures of all the possible isomers having the molecular formula $C_2H_4Cl_2$.

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4. How many mole of PCI_5 molecule used in formation of Alkyl halide from alcohol.

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5. Why propene is more reactive than ethene in Addition reaction with HBr .

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6. Why halogenation of Alkane is not suitable method for preparation of Alkyl halide ?

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7. Why is sulphuric acid not used during the reaction of alcohols with KI?

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8. Write structures of different dihalogen derivatives of propane.

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9. Among the isomeric alkanes of molecular formula C_5H_{12}, identify the one that on photochemical chlorination yields

(i) A single monochloride.

(ii) Three isomeric monochlorides.

(iii) Four isomeric monochlorides.

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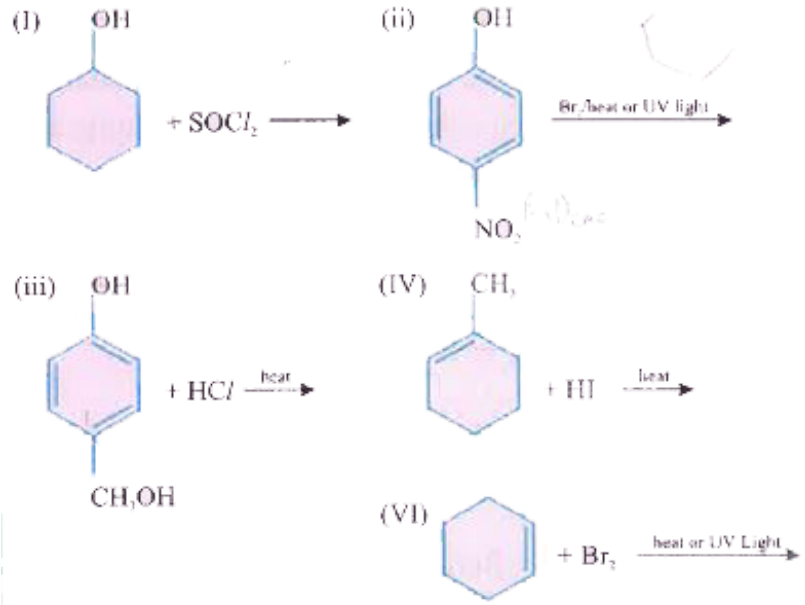
10. Draw the structure of major monohalo products in each of the following reactions



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11. Why R-I is more reactive than R-Cl in substitute reaction (S_N2 method) ?

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12. Arrange each set of compounds in order of increasing boiling points.

(i) Bromomethane, Bromoform, Chloromethane, Dibromomethane.

(ii) 1-Chloropropane, Isopropyl chloride, 1-Chlorobutane.

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13. Why inert solvent (Ether) used in formation of Grignard Reagent ?

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14. Explain nature of Chloroform in H_2O.

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15. Write formula of freon 11.

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16. Why chloro - Benzene is less reactive than chloroethane in substitution reaction ?

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17. Write the I.U.P.A.C name of D.D.T.

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18. Which alkyl halide from the following pairs would you expect to react more rapidly by an S_N2 mechanism ? Explain your answer.

(i) $CH_3CH_2CH_2CH_2Br$ or $CH_3CH_2(Br)CH_3$

(ii) $CH_3CH_2CH(Br)CH_3$ or $(CH_3)_3CBr$

(iii) $(CH_3)_2CHCH_2CH_2Br$ or $CH_3CH_2CH(CH_3)CH_2Br$

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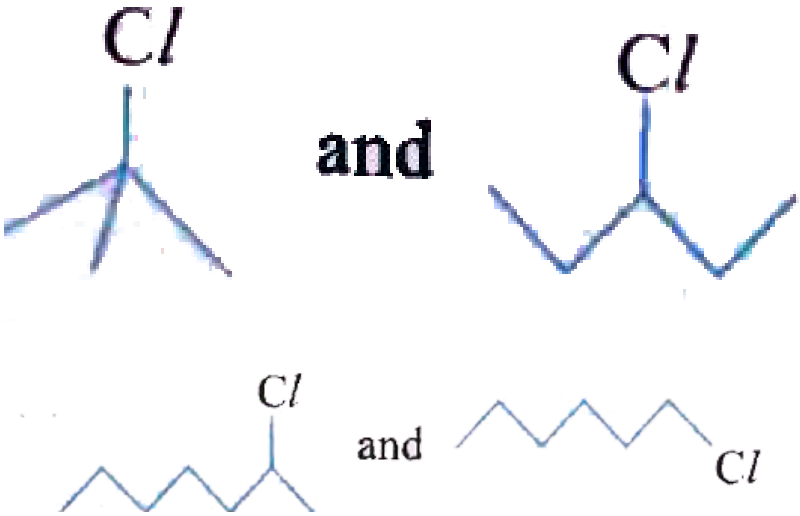
19. In the following pair of halogen compounds, which compound undergoes faster $S_N l$ reaction ?



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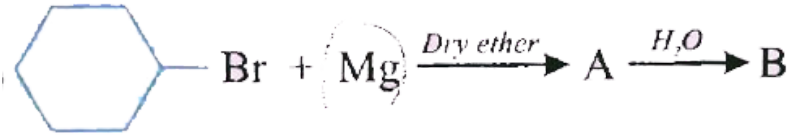
20. Identify A, B, C , E , F, R and R' in the following

(i) 

(ii) $R - Br + Mg \xrightarrow{\text{Dry ether}} C \xrightarrow{D_2O} CH_3CH(D)CH_3$

(iii) $(CH_3)_3C - C(CH_3)_3 \xleftarrow{Na/\text{ether}} R - X \xrightarrow{Mg} E \xrightarrow{H_2O} F$

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Cuq

1. Which following is primary alkyl halide alkyl halide

A. $R - CH_2 - X$

B. R_2CHX

C. $R_3C - X$

D. $R - H$

Answer: A

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2. Secondary halide among the following is

A. isopropyl chloride

B. isobutyl chloride

C. n - propyl chloride

D. n - butyl chloride

Answer: A

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3. Ethyledene bromide is

A. CH_3CH_2Br

B. $BrCH_2CH_2Br$

C. CH_3CHBr_2

D. $CH_2 = CHBr$

Answer: C

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4. which of the following is gem-dihalide ?

A. $CH_3CHBrCH_2Br$

B. CH_3CHBr_2

C. $CH_3CHBrCH_2CH_2Br$

D. $BrCH_2CH_2Br$

Answer: B

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5. Vicinal dihalide is

A. CH_3CH_2Br

B. $BrCH_2CH_2Br$

C. CH_3CHBr_2

D. $CH_2 = CHBr$

Answer: B

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6. The reagent used to get alkyl halide from alcohol is

A. PCl_5

B. $SOCl_2$

C. both 1 & 2

D. Cl_2

Answer: C

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7. The only alkene which gives primary alkyl halides on hydrohogenation

A. C_2H_4

B. C_3H_6

C. C_4H_8

D. C_5H_{10}

Answer: A

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8. In the preparation of alkyl halide from alkene and halogen which of the following reaction is involved

A. electrophilic addition

B. nuclephilic addition

C. electrophilie substitution

D. nucleophilic substitution

Answer: A

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9. In the preparation of alkyl halide from alkene and halogen which of the following reaction is involved

A. free radical substitution

B. nuclephilic addition

C. electrophilie substitution

D. nucleophilic substitution

Answer: A

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10. Grignard reagent is formed when alkyl halide react with which one of the following

A. Mg in alcohol

B. Mg in acid

C. Mg in dry ether

D. MgO

Answer: C

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11. When alkyl halid reaction with moist Ag_2O it gives

A. alcohol

B. ether

C. alkane

D. alkene

Answer: A

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12. Alkyl halide on reduction with Zn + HCl gives

A. alcohol

B. alkene

C. alkane

D. ether

Answer: C

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13. Isocyanide is formed as the major product of the reaction when alkyl halide is treated with one the following

A. $AgNO_2$

B. KNO_2

C. $AgCN$

D. KCN

Answer: C

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14. Which of the reaction are most common in alkyl halides

A. nucleophilic addition

B. electrophilic

C. nucelophilic substitution

D. electrophilic substitution

Answer: C

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15. Treatment of ammonia with excess of ethyl chloride will yeild

A. diethyl amine

B. ethane

C. tetra ethyl ammonium chloride

D. methyl amine

Answer: C

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16. In chloro ethane the carbon bearing halogen is bonded to .....hydrogens and nature of alkyl halide is

A. three, primary

B. two , secondary

C. one, tertiary

D. two , primary

Answer: D

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17. Which of the following alkyl halide is used as ethylating agent ?

A. CH_3I

B. C_2H_5

C. $C_2H_4Br_2$

D. C_2H_5OH

Answer: B

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18. Which of the following is used as refrigerant

A. CH_3COOCH_3

B. CCl_4

C. CF_2Cl_2

D. CF_4

Answer: C

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19. Ethyl chloride is not useful in preparing

A. PVC

B. TEL

C. grignard reagent

D. diethyl ether

Answer: A

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20. S_N1 reaction occurs through the intermediate formation of

A. carbocation

B. carbanion

C. free radical

D. transition

Answer: A

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21. The rate of S_N2 reaction is maximum when the solvent is

A. methyl alcohol

B. water

C. dimethyl sulphoxide

D. benzene

Answer: C

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22. The most reactive nucleophile among the following is

A. CH_3O^-

B. $C_6H_5O^-$

C. $(CH_3)_2CHO^-$

D. $(CH_3)_3CO^-$

Answer: A

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23. The correct order of reactivity towards nucleophilic substitution reaction is

A. $CH_3F > CH_3Cl > CH_3Br > CH_3I$

B. $CH_3I > CH_3Br > CH_3Cl > CH_3F$

C. $CH_3I > CH_3Cl > CH_3Br > CH_3F$

D. $CH_3I > CH_3Br > CH_3F > CH_3Cl$

Answer: B

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24. In S_N2 reaction the order of reactivity of the halides. $CH_3X, C_2H_5X, n-C_3H_7X, n-C_4H_9X$ is

A. $CH_3X > C_2H_5X > n-C_3H_7X > n-C_4H_9X$

B. $C_2H_5X > n-C_3H_7X > n-C_4H_9X > CH_3X$

C. $C_2H_5X > n-C_3H_7X > n-C_4H_9X < CH_3X$

D. $n-C_4H_9X > n-C_3H_7X > C_2H_5X > CH_3X$

Answer: A

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25. S_N2 mechanism proceeds through formation of :

A. carbocation

B. transition state

C. free radical

D. carbanion

Answer: B

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26. In Dow's process, the starting raw material is

A. Phenol

B. chlorobenzene

C. aniline

D. diazobenzene

Answer: B

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27. Chlorobenzene is prepared commercially by

A. Dow's process

B. Decon's process

C. Rascing process

D. Etard process

Answer: C

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28. Chlorobenzene is _____ reactive than benzene towards electrophilic substitution and directs the incoming electrophile to the____ position.

A. more, ortho & para

B. less, ortho & para

C. more, meta

D. less, meta

Answer: B

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29. The raw material for Raschig process is

A. chloro benzene

B. phenol

C. benzene

D. anisol

Answer: C

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

A. Fitting reaction

B. Wurtz fitting reaction

C. Wurtz reaction

D. Sandmeyer reaction

Answer: A

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31. An organic compound which produces a bluish green colored flame on heating in the presence of copper is

A. chloro benzene

B. benzaldehyde

C. aniline

D. benzoic acid

Answer: A

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32. The raw materials for the commercial manufacture of DDT are

A. chloro benzene and chloroform

B. chloro benzene and chloro methane

C. chloro benzene and chloral

D. chloro benzene and iodoform

Answer: C

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33. Iodoform is used as an:

A. anaesthetic

B. antiseptic

C. analgesic

D. anti febrin

Answer: B

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34. The following is used in paint removing

A. $CHCl_3$

B. CH_2Cl_2

C. CCl_4

D. CH_3Cl

Answer: B

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35. In fire extinguishers , following is used

A. $CHCl_3$

B. CS_2

C. CCl_4

D. CH_2Cl_2

Answer: C

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36. The following is used for metal cleaning and finishing

A. $CHCl_3$

B. CHI_3

C. CH_2Cl_2

D. C_6H_6

Answer: C

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37. First chlorinated insecticide

A. DDT

B. gammaxene

C. iodoform

D. freon

Answer: A

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38. The following is used as anaesthetic

A. C_2H_4

B. $CHCl_3$

C. CH_2Cl_2

D. DDT

Answer: B

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39. Freon - 12 is

A. CF_3Cl

B. $CHCl_2F$

C. CF_2Cl_2

D. $CFCl_3$

Answer: C

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40. The name of DDT is

A. p,p - dichloro diphenyl trichloro ethane

B. p,p - dichloro diphenyl trichloro ethene

C. p,p - dichloro diphenyl trichloro benzene

D. p,p - tetra chloro ethane

Answer: A

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41. Freon R - 22 is

A. $CHClF_2$

B. CCl_2F_2

C. CH_3Cl

D. CH_2Cl_2

Answer: A

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42. The molecular formula of DDT has _____.

A. 5 Cl atoms

B. 4 Cl atoms

C. 3 Cl atoms

D. 2 Cl atoms

Answer: A

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Exercise I C W

1. In the reaction $C_2H_5OH + \text{HX} \xrightarrow{ZnX_2} C_2H_5X$, the order of the reactivity of HX is :

A. $HBr > HI > HCl$

B. $HI > HCl > HBr$

C. $HI > HBr > HCl$

D. $HCl > HBr > HI$

Answer: C

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2. The main product of the reaction of propane with chlorine at $25^\circ C$ in the presence of sunlight is

A. 1 - Choropropane

B. 2 - Choropropane

C. Cholorethane

D. Chloromethane

Answer: B

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3. $C_3H_8 + CI_2 \xrightarrow{Light} C_3H_7CI + HCI$ is an example of which of the following types of reactions ?

A. Substitution

B. Elimination

C. Addition

D. Rearrangement

Answer: A

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4. Which of the following is a solid at room temperature :

A. Methyl chloride

B. Chloroform

C. iodoform

D. Bromofom

Answer: C

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5. The most inert compound is :

A. Iodoform

B. Dichloromethane

C. Dichlorodifluoro methane

D. Chloroform

Answer: C

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6. What is false for most alkyl halides?

A. These are completely soluble in water

B. These give nucleophilic substitution reactions

C. These are insoluble in water

D. The are soluble in organic solvents

Answer: A

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7. CCl_4 is insoluble in water because :

A. Water is polar

B. CCl_4 is nonpolar

C. Water and CCl_4 are polar

D. None of the above

Answer: B

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8. The compound with highest boiling point is :

A. C_2H_5I

B. C_2H_5Br

C. C_2H_5Cl

D. CH_3Cl

Answer: A

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9. How many monochlorobutanes will be obtained on chlorination of n-butane?

A. 2

B. 3

C. 5

D. 1

Answer: B

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10. Arrange the following halides in the decreasing order of SN^1 reactivity :

(I) $CH_3CH_2CH_2Cl$,

(II) $CH_2 = CHCH(Cl)CH_3$

(III) $CH_3CH_2CH(Cl)CH_3$

A. $I > II > III$

B. $II > I > III$

C. $II > III > I$

D. $III > II > I$

Answer: C

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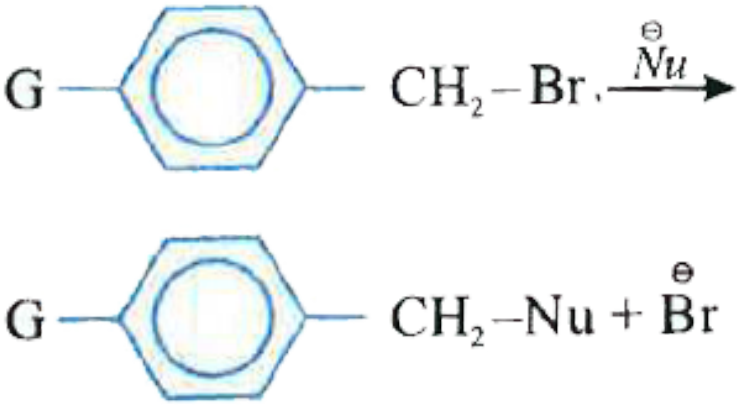
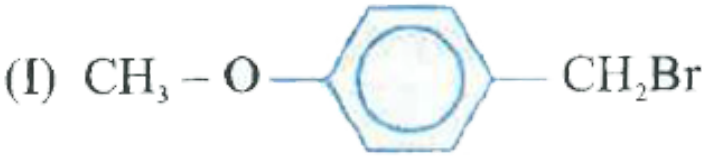
11. Para - substituted benzyl bromide undergeos S_N1 reaction with nucleophiles :



Arrange given four compounds in their decreasing order of reactivity for

the above reaction :

(I) 

(II) 

(III) 

(IV) 

A. $II > I > III > IV$

B. $I > IV > III > II$

C. $I > IV > II > III$

D. $II > III > IV > I$

Answer: C

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12. The products of reaction of alcoholic silver nitrite with enthyl bromide are

A. Ethane

B. Ethene

C. Ethyl alcohol

D. Nitroethane

Answer: D

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13. Ethylidene chloride on treatement with aq. KOH gives

A. CH_3CHO

B. $\begin{vmatrix} CH_2OH \\ CH_2OH \end{vmatrix}$

C. HCHO

D. $\begin{array}{l} CHO \\ | \\ CHO \end{array}$

Answer: A

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14. The order of reactivities of the following alkyl halides for a S_{N^2} reaction is :

A. $RF > RCl > RBr > RI$

B. $RCl > RBr > RI$

C. $RF > RBr > RCl > RI$

D. $RI > RBr > RCl > RF$

Answer: D

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15. $CH_3OH \xrightarrow{PI_3} (A) \xrightarrow{KCN} (B) \xrightarrow{\text{Hydrolysis}} (C).$

The compound (C) is :

A. CH_3OH

B. $HCOOH$

C. CH_3CHO

D. CH_3COOH

Answer: D

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16. S_N^1 reaction is favoured by

A. Non - polar solvents

B. Bulky alkyl groups on the carbon atom attached to halogen atom

C. Less steric hindrance containing akyl halides

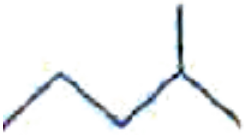
D. Less stable carbocation

Answer: B

Watch Video Solution

17. Which among the following alkane of formula (C_6H_{14}) gives five types of of C_6H_{13} (excluding stereoisomer) ?

A. 

B. 

C. 

D. 

Answer: B

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18. Which of the following statement is correct about C_2H_5Br ?

A. It reacts with metallic Na to give only ethane .

B. It gives nitroethane on heating with aqueous ethanolic solution of

$AgNO_2$.

C. It gives C_2H_2OH on boiling with alcoholic potash.

D. It forms ethane on heating wit silver acetate.

Answer: B

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19. $R - X + NaOH \rightarrow ROH + NaX$

The above reaction is classified as

A. nucleophilic substitution

B. electrophilic substitution

C. reduction

D. oxidation

Answer: A

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20. The dipole moment of CH_3X (where X is a halogen) follows the order

A. $CH_3F > CH_3Cl > CH_3Br$

B. $CH_3F > CH_3Br > CH_3Cl$

C. $CH_3Cl > CH_3F > CH_3Br$

D. $CH_3Br > CH_3Cl > CH_3F$

Answer: C

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21. Which of the following statement is false regarding S_N2 reaction shown by alkyl halides ?

A. The conversion of reactants to transition state is the rate determining step

B. The S_N2 reaction involves the stereochemistry around carbon atoms of the substrate.

C. The rate of reaction depends on the stric bulk of the alkyl group

D. The nucleophilicity of halides follows the order $Cl^- > Br^- > I^-$.

Answer: D

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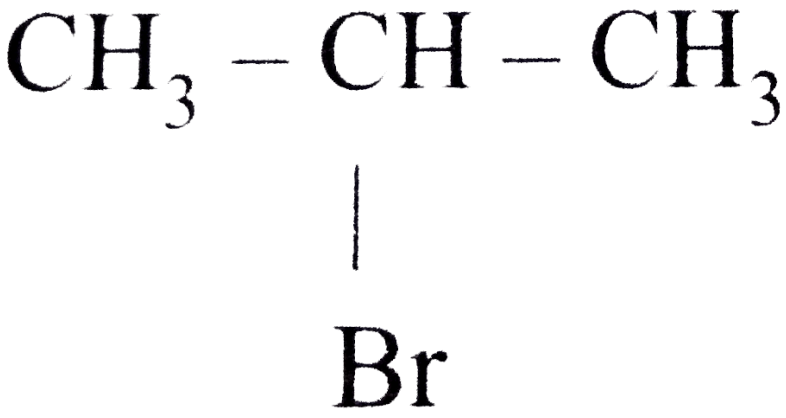
22. Identify the set of reagents / reaction conditions $'X'$ and $'Y'$ in the following set of transformations.

$CH_3 - CH_2CH_2Br \xrightarrow{X} Product \xrightarrow{Y}$



A. X = Dilute aqueous naOH, $20^\circ C$,

Y = HBr/acetic acid , $20^\circ C$

B. X = Concentrated alcoholic NaOH, $80^\circ C$,

Y = HBr/acetic acid , $20^\circ C$,

C. X = Concentrated alcoholic NaOH, $80^\circ C$,

Y = $Br_2 / CHCl_3, 0^\circ C$

D. X = Concentrated alcoholic NaOH, $80^\circ C$,

Y = $Br_2 / CHl_3, 0^\circ C$

Answer: B

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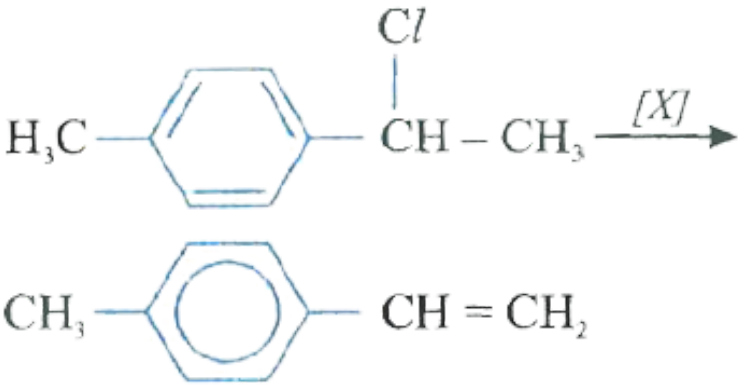
23. In the given reaction sequence:



[X] will be

A. alc $KO\frac{H}{\Delta}$

B. $C_2H_5\overset{\Theta}{O}/\Delta$

C. alc $NaOH/\Delta$

D. all of these

Answer: D

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24. $\underset{(A)}{C_4H_8Cl_2} \xrightarrow[\text{Heat}]{alc.KOH} B \xrightarrow{HgSO_4, H_2SO_4} C$.

C given idoform test. Hence A can be

A. 1,1 - dichlorobutane

B. 1,2 - dichlorobutane

C. 2,2 - dichlorobutane

D. Any of these

Answer: D

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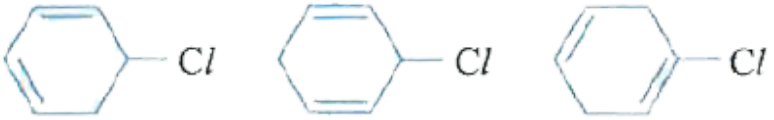

I II III

25.

Which one is most easily dehydrohalogenated ?

A. I

B. II

C. III

D. All with same ease

Answer: A

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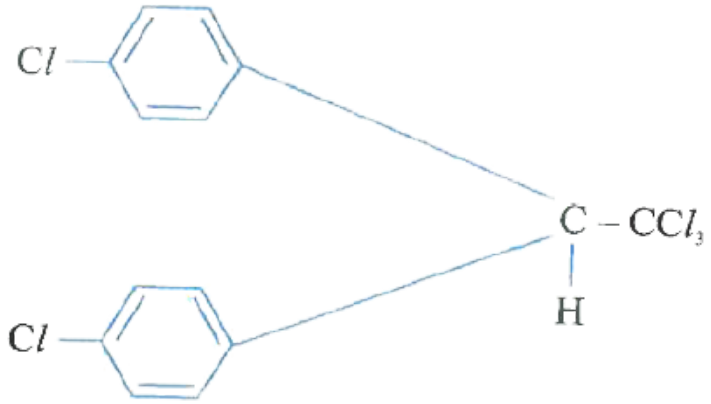

26.

The above structural formula refers to

A. BHC

B. DNA

C. DDT

D. RNA

Answer: C

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27. Which of the following will react with water?

A. $CHCl_3$

B. Cl_3CCHO

C. CCl_4

D. $ClCH_2CH_2Cl$

Answer: B

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28. $CHCl_3$ on oxidation by air in presence of light gives

A. phosgene

B. formic acid

C. chloropicrin

D. CCl_4

Answer: A

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29. The final product formed by distilling ethyl alcohol with excess of Cl_2 and $Ca(OH)_2$ is

A. CH_3CHO

B. $(CH_3)_2O$

C. $CHCl_3$

D. CCl_3CHO

Answer: C

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30. Chloroform is stored in dark coloured bottles because it is oxidized in the presence of light and air to a poisonous compound

A. CO

B. $COCl_2$

C. CO_2

D. CCl_4

Answer: B

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Exercise I H W

1. The IUPAC name of $(CH_3)_2CHCH_2Br$ is

A. 1 - bromo - 2- methylpropane

B. 2 - bromo - 2- methylpropane

C. 1 - bromo - 1- methylpropane

D. 2 - bromo - 1- methylpropane

Answer: A

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2. The IUPAC name of alyl chloride is

A. 1 - chloro etane

B. 3 - chloro - 1 - propyne

C. 3 - chloro - 1 - propene

D. 1 - chloropropene

Answer: C

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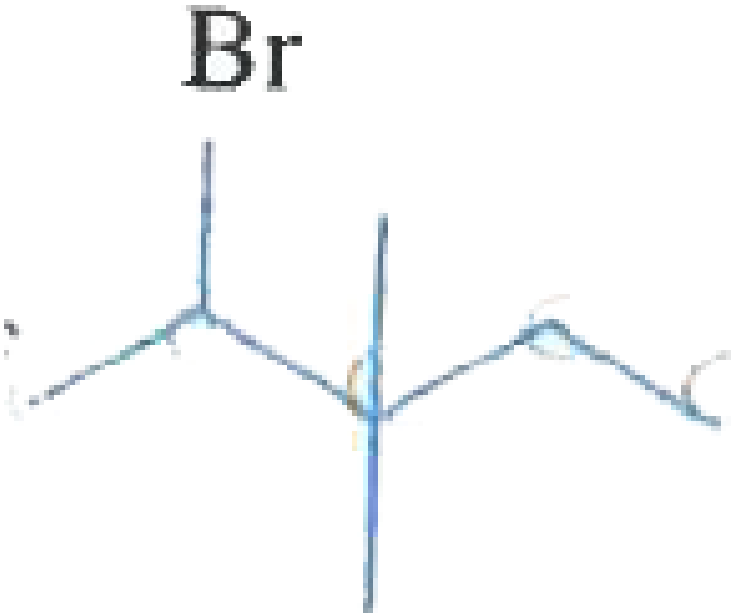
3. IUPAC name of



A. 2 - bromo - 3 - methyl pentane

B. 2 - bromo - 3,3 - dimethyl butane

C. 4 - bromo - 3,3 - dimethyl butane

D. 2 - bromo - 3,3 - dimethyl pentane

Answer: D

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4. C-Cl bond of chlorobenzene in comparison to C-Cl bond of methyl chloride is

A. Longer and weaker

B. Shorter and weaker

C. Shorter and stronger

D. Longer and stronger

Answer: C

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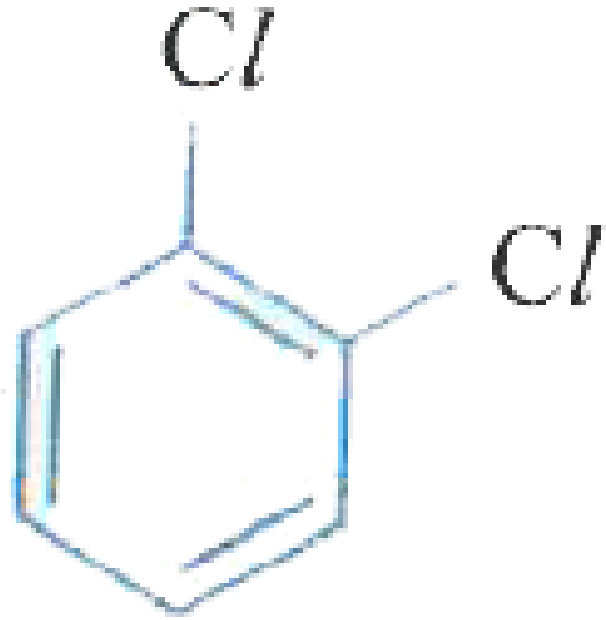
5. IUPAC name is



A. 1,2 - dichloro benzene

B. m - dichloro benzene

C. 1,6 - dichloro benzene

D. o - dichloro benzene

Answer: A

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6. Carbon atom holding halogen in aryl halides is

A. sp^2 hydridised

B. sp hybridised

C. sp^3 hybridised

D. sp^3 d hybrididised

Answer: A

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7. The following is aryl alkyl halide

A. o - chloro toluene

B. o - bromo chloro benzene

C. 1 - chloro - 2 - phenyl ethane

D. toluene

Answer: C

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8. $C_2H_5OH \xrightarrow{PCl_5} X$. In this reaction 'X' is

A. Ethanol

B. Ethylene chloride

C. ethylidene chloride

D. ethyl chloride

Answer: D

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9. Thionyl chloride is preferred in the preparation of chloro compound from alcohol since

A. Both the byproducts are gases and they escape out leaving product in pure state

B. It is a chlorinating agent

C. It is a oxidising agent

D. All other reagent are unstable

Answer: A

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10. The only alkene which gives primary alkyl halides on hydrohalogenation

A. C_2H_4

B. C_3H_6

C. C_4H_8

D. C_5H_{10}

Answer: A

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11. $-OH$ can be replaced by -Cl if we use

A. PCl_5

B. PCl_3

C. S_2Cl_2

D. $SOCl_2$

Answer: C

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12. Which one of the following has the lowest boiling point ?

A. CH_2Cl

B. C_2H_5Cl

C. C_2H_5Br

D. C_2H_5I

Answer: A

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13. Chloroethane is reacted with alcoholic potassium hydroxide . The product formed is

A. C_2H_6O

B. C_2H_6

C. C_2H_4

D. C_2H_4O

Answer: C

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14. What is X in the following reaction ?

$C_2H_5Cl + X \rightarrow C_2H_5OH + KCl$

A. $KHCO_3$

B. alc. KOH

C. aq. KOH

D. K_2CO_3

Answer: C

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15. Which of the following acids will give maximum yield of alkyl chloride in Huns diecker reaction

A. $CH_3CH_2CH_2COOH$

B. $(CH_3)_2CHCOOH$

C. $(CH_3)_3\mathbb{C}OOH$

D. $C_6H_5CH(CH_3)COOH$

Answer: A

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16. In the reaction sequence

$$C_2H_5Cl + KCN \xrightarrow{C_2H_5OH} X$$

What is the molecular formula of X is

A. C_2H_5CN

B. C_2H_5NC

C. C_2H_5OH

D. C_2H_6O

Answer: A

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17. Ethyl chloride on heating with AgCN fonns a compound (X). The functional isomer of (X) is:

A. C_2H_5NC

B. C_2H_5CN

C. $H_3C - NH - CH_3$

D. $C_2H_5NH_2$

Answer: B

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18. With Zn - Cu couple and C_2H_5OH , ethyl Iodide reacts to give

A. ethers

B. diethyl enther

C. iodoform

D. Ethane

Answer: D

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19. In the dehydrohalogenation of ethyl chloride the following change occurs.

A. sp^2 carbon converts to sp^3 carbon

B. sp^2 carbon convertes to sp carbon

C. sp^3 carbon converts to sp carbon

D. sp^3 carbon converts to sp^2 carbon

Answer: D

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20. The reaction $C_2H_5Cl + OH^- \rightarrow C_2H_5OH + Cl^-$ is

A. S_N1

B. S_N2

C. S_E1

D. S_E2

Answer: B

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21. (R) -2- Octy tosylate is sololyzed in water under ideal S_{N^1} conditions ,the product (s) will be :

A. R - 2 - octanol and S - 2 - octanol in a 1 : 1 ratio

B. R - 2 - octanol and S - 2 - octanol in a 1 : 5 ratio

C. R - 2 - octanol only

D. S - 2 - octanol only

Answer: A

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22. The absolute configuration of a molecule changes during the reaction.

A. S_N1

B. S_N2

C. Both S_N1& S_N2

D. None of the above

Answer: B

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23. For a uncleophillic substitution reaction the rate was found in the order $RI > RBr > RCl > RF$ then the reaction could be

A. S_N1 only

B. S_N2 only

C. either S_N1 or S_N2

D. neither S_N1 nor S_n2

Answer: C

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24. S_N2 reaction leads to

A. inversion of configuration

B. retention of configuration

C. partial racemisation

D. no racemisation

Answer: A

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25. Which of the following alkyl halides is hydrolysed by S_{N^1} mechanism?

A. CH_3Cl

B. $CH_3 - CH_2 - Cl$

C. $CH_3 - CH_2 - CH_2 - Cl$

D. $(CH_3)_3C\ Cl$

Answer: D

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26. Chloro benzene can be prepared by reacting benzene diazonium chloride with

A. HCl

B. Cu_2Cl_2 / HCl

C. $Cl_2 / AlCl_3$

D. NHO_2

Answer: B

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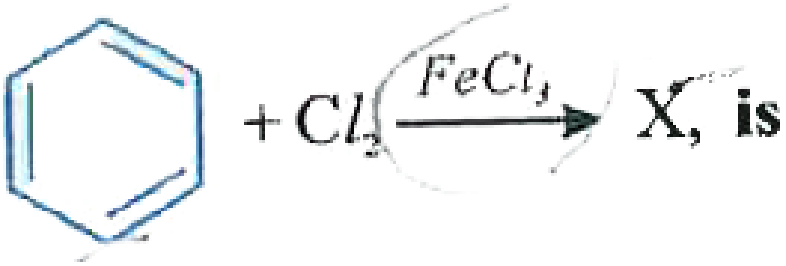
27. 

A. chlorobezene

B. m- dichloro benzene

C. benzene hexachloride

D. p - dichlorobenzene

Answer: A

Watch Video Solution

28. The following is an example of Sandmeyer reaction

A. $C_6H_5N_2^+Cl^- \xrightarrow{CuCl\,/\,HCl} C_6H_5Cl$

B. $C_6H_5N_2^+Cl^- \xrightarrow{H_2O\,/\,\Delta} C_6H_5OH$

C. $C_6H_5N_2^+Cl^- \xrightarrow{HBF_4} C_6H_5F$

D. $C_6H_5N_2^+Cl^- \xrightarrow{KI\,/\,\text{warm}} C_6H_5I$

Answer: A

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29. Chlorobenzene on reaction with CH_3Cl in presence of $AlCl_3$ gives

A. toluene

B. m - chloro toluene

C. only o - chloro toluene

D. mixture of o - and p - chlorotoulene

Answer: D

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30. $2C_6H_5Cl + 2Na \xrightarrow{dryether} X$, X is

A. toluene

B. biphenyl

C. phenyl ethane

D. 1 - chloro - 2- phenyl ethane

Answer: B

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31. Chlorobenzene on fusing with solid $NaOH$ gives

A. benzene

B. benzoic acid

C. phenol

D. benzene chloride

Answer: C

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32. Chlorobenzene on nitration gives major product of

A. 1 - chloro - 4 - nitro benzene

B. 1 - chloro - 3 - nitro benzene

C. 1,4 - dintro benzene

D. 2,4,6 - tri nitro benzene

Answer: A

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33. The reaction $C_6H_5I + 2Na + CH_3I \xrightarrow{dryether} C_6H_5CH_3 + 2NaI$ is

A. Wurtz reaction

B. Fitting reaction

C. Wurts - Fitting reaction

D. Sandmeyer reaction

Answer: C

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Exercise Ii C W

1. $C_2H_5I \xrightarrow[\text{ether}]{Na} X$. Here X is :

A. Methane

B. Methane iodide

C. Ethane

D. Butane

Answer: D

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2. Chlorination of CH_4 in sunlight involves

A. Homolytic cleavage

B. Heterolytic cleavage

C. Carbocation

D. carbanion

Answer: A

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3. Iodoform cannot be prepared by reacting which of the following with NaOH and iodine

A. CH_3OH

B. CH_3CH_2OH

C. CH_3CHO

D. $(CH_3)_2CO$

Answer: A

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4. The product obtained on reaction of C_2H_5Cl with hydrogen over palladium carbon is

A. C_3H_8

B. C_4H_{10}

C. C_2H_6

D. C_2H_4

Answer: C

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5. Which of the following is liquid at room temperature

A. CH_3I

B. CH_3Br

C. C_2H_5Cl

D. CH_3F

Answer: A

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6. Which of the following undergoes nucleophilic substitution exclusively by S_{N^1} mechanism?

A. Ethyl chloride

B. Isopropyl chloride

C. Benzyl chloride

D. Chlorobenzene

Answer: C

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7. A single alkene is produced when an alkyl bromide reacts with sodium ethoxide and ethanol. This alkene undergeoes hydrogenation and produces 2 - methyl butane . What is the identity of the alkyl bromide ?

A. 1 - bromo -2,2- dimethylpropane

B. 1 - bromobuatane

C. 1 - bromo, 2 - methylbutane

D. 2 - bromo, 2 - methylbutane

Answer: C

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8. An organic compound $A(C_4H_6CI)$ on reation withNa/diethyl ether gives a hydrocarbon which on monochlorination gives only one chloro derivative A is .

A. t - butyl chloride

B. sec - butyl chloride

C. isobutyl chloride

D. n - butyl chloride

Answer: A

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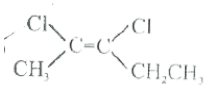
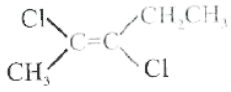
9. What is the major product of the following reaction ?

$$CH_3C \equiv C - CH_2 - CH_3 \xrightarrow[\text{catalyst}]{1 \text{ mole of } Cl_2} ?$$

A. 

B. $CH_3CH_2 - \overset{\overset{Cl}{|}}{\underset{\underset{Cl}{|}}{C}} - CH_2CH_3$

C. $CH_3 - \overset{\overset{Cl}{|}}{\underset{\underset{Cl}{|}}{C}} - CH_2 - CH_2 - CH_3$

D. 

Answer: A

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10. The reaction $C_2H_5OH + SOCl_2 \xrightarrow{\text{Pyridine}} C_2H_5Cl + SO_2 + HCl$ is known as

A. Kharasch effect

B. Darzen's procedure

C. Williamson's synthesis

D. Hunsdiecker reaction

Answer: B

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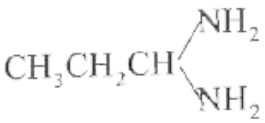
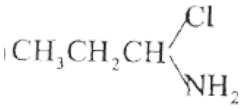
11. When $CH_3CH_2CHCl_2$ is treated with $NaNH_2$, the product formed is

A. $CH_3 - CH = CH_2$

B. $CH_3 - C \equiv CH$

C. 

D. 

Answer: B

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12. $CH_3CH_2Cl \xrightarrow{NaCN} X \xrightarrow{Ni/H_2} Y \xrightarrow[\text{anhydride}]{Acetic} Z$

Z in the above reaction sequence is .

A. $CH_3CH_2CH_2NHCOCH_3$

B. $CH_3CH_2CH_2NH_2$

C. $CH_3CH_2CH_2CONHCH_3$

D. $CH_3CH_2CH_2CONHCOCH_3$

Answer: A

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13. Benzene reacts with chlorine to form benzene hexachloride in presence of

A. Sunlight

B. Zn

C. $AlCl_3$

D. Nitroethane

Answer: A

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14. Chloroform when treated with aniline and alcoholic KOH forms -

A. Phenyl cyanide

B. Phenyl isocyanide

C. Phenyl isocyanate

D.

Answer: B

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15. The reaction $C_2H_5ONa + BrC_2H_5 \rightarrow C_2H_5 - O - C_2H_5 + NaBr$ is called

A. Frankland reaction

B. Wurtz reaction

C. Williamson's synthesis

D. Cannizaro reaction

Answer: C

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16. Identify Z in the following series:

$$C_2H_5I \xrightarrow[\text{KOH}]{\text{Alcoholic}} \text{X} \xrightarrow{Br_2} \text{Y} \xrightarrow{\text{KCN}} Z$$

A. $CH_3 - CH_2CN$

B. $CN - CH_2 - CH_2CN$

C. $BR - CH_2 - CH_2CN$

D. $BRCH = CHCN$

Answer: B

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17. What is X in the following reaction ?

$C_2H_5Cl + X \rightarrow C_2H_5OH + KCl$

A. $KHCO_3$

B. Alcoholic KOH

C. Aqueous KON

D. K_2CO_3

Answer: C

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18. 1 - Chloroprapane and 2 - chloropropane are

A. Position isomers

B. Chain isomers

C. Functional isomers

D. Optical isomers

Answer: A

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19. The compound , pyrene, used in fire extinguishers is

A. CH_2Cl_2

B. $CHCl_3$

C. CCl_4

D. CF_2Cl_2

Answer: C

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20. On sulphonation of C_6H_5Cl

A. Benzene sulphonic acid is formed

B. Metachlorobenze sulphonic acid is formed

C. Orthochlorobenzene sulphonic acid is formed

D. Orth and para chlorobenzene sulphonic acids are formed

Answer: D

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21. Which is the carbylamine reaction ?

A. $C_2H_5NH_2 + 3KOH + CHCl_3 \rightarrow C_2H_5N + 3KCl + 3H_2O$

B. $C_6H_6 + CH_3Cl \xrightarrow{\text{anhydrous}} C_6H_5CH_3 + HCl$

C. $2HCHO + NaOH \rightarrow CH_3OH + HCOONa$

D. $2CH_3Cl + 2Na \rightarrow CH_3 - CH_3 + 2NaCl$

Answer: A

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22. The product formed in the following reaction is

$CH_3CH(CH_3)CH = CH_2 + HBr \rightarrow$ Product

A. $(CH_3)_2CHCH(Br)CH_3$

B. $(CH_3)_2CHCH_2CH_2Br$

C. $(CH_3)_2C(Br)CH_2CH_3$

D. $CH_3CH(CH_3)CH(Br)CH_2CH_3$

Answer: C

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23. Total number of acyclic isomers including stereoisomers of $AlCl_3$ find product is

A. 9

B. 10

C. 12

D. 13

Answer: C

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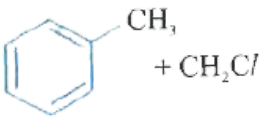
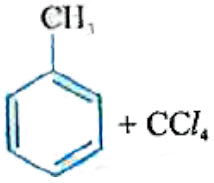
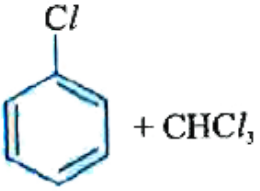
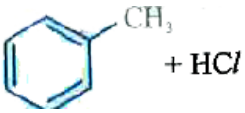
24. During Friedel craft reaction of Benzene with CH_3Cl in presence of $AlCl_3$ find product is

A. 

B. 

C. 

D. 

Answer: D

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25. Chlorobenzene reacts with Mg in dry ether to give a compound A, which further reacts with ethanol to give

A. phenol

B. benzene

C. ethyl benzene

D. phenyl ether

Answer: B

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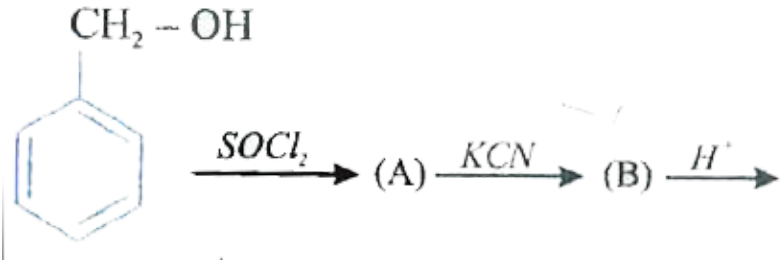
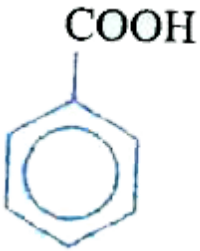
26.

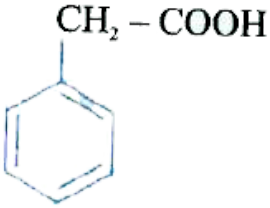


A.

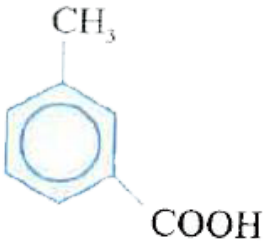


B.

C.



D.



Answer: C

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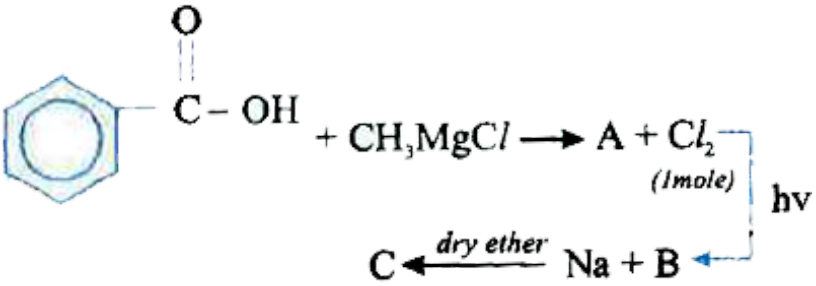
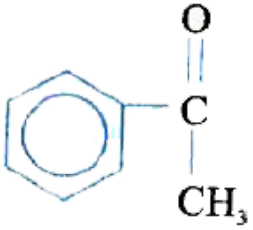
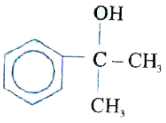
27.



What is C ?

A. $CH_3 - CH_3$

B. 

C. 

D. $CH_2 = CH_2$

Answer: A

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28. The correct orders of reactivity tow ards S_N1 reaction is

A. $I > II > III$

B. $II > III > I$

C. $III > II > I$

D. $I > III > II$

Answer: A

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Exercise Ii H W

1. Isomerism shown by 2,3-dichlorobutane is

A. diastereomerism

B. Optical isomerism

C. geometric isomerism

D. structural isomerisms

Answer: B

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2. The number of possible monochloro isomers (including stereoisomer) formed on monochlorination of (CH) ... CHCH..CH..is

A. 2

B. 3

C. 6

D. 5

Answer: C

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3. Among the isomeric alkanes formula C_5H_{12}, identify the one that on photochemical chlorination yields only monochloro derivative.

A. neo pentane

B. n-pentane

C. is-pentane

D. 2-methyl propane

Answer: C

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4. Secondary be akkyl halide among the following is

A. 2-bromo-3methyl butane

B. 1-bromo-3methyl butane

C. 2-bromo-2methyl butane

D. 1-bromo-2methyl butane

Answer: A

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5. $RCl + NaI \xrightarrow{\text{Acetone}} R - I + NaCl$

This reaction is known as

A. Wurtz reaction

B. Fitting reaction

C. Finkelstein reaction

D. Frankland reaction

Answer: C

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6. $C_2H_5OH + SOCl_2 \xrightarrow{\text{Pyridine}} x + y + z$ in this reaction x, y and z respectively are

A. $C_2H_4CI_2, SO_2, HCI$

B. C_2H_5CI, SO_2, HCI

C. $C_2H_5Cl, SOCl$

D. C_2H_4, SO_2, Cl_2

Answer: B

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7. 2-Methylbutane on reaction with bromine in the presence of sunlight gives mainly-

A. 1-bromo-3methyl butane

B. 2-bromo-3methyl butane

C. 2-bromo-2methyl butane

D. 1-bromo-2methyl butane

Answer: C

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8. In the Hunsdiecker reaction .

A. number of carbon atoms decrease

B. number of carbon atoms increase.

C. number of carbon atoms remains same

D. Carboxylic acid is formed

Answer: A

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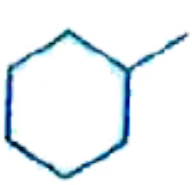
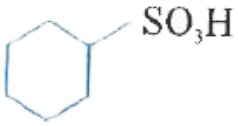
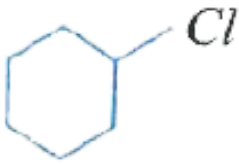
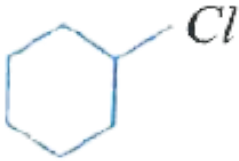
9. Complete the following reaction



$+ SOCl_2 \rightarrow X.$ X is

A. 

B. 

C. 

D. 

Answer: C

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10. Among the following , the compound with highest density is

A. $n - C_3H_7Cl$

B. $n - C_3H_7Br$

C. $n - C_3H_7I$

D. $CHCl_3$

Answer: C

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11. $C_2H_5Cl + AgOH \rightarrow A + AgCl$.

$A + CH_3COCl \rightarrow A + AgCl.$ "C " is

A. Ethyl acetate

B. Methyl acetate

C. Butanon - 2

D. Propanone

Answer: A

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12. The compound (B) in the below reaction is ,

$C_2H_5Cl \xrightarrow{KCN} A \xrightarrow{H_3O^+} B$

A. ethylene chloride

B. acetic acid

C. propionic acid

D. ethyl cyanide

Answer: C

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13. Cholor ethane reacts with X to form diethyl ether. What is X ?

A. NaOH

B. H_2SO_4

C. C_2H_5ONa

D. $Na_2S_2O_3$

Answer: C

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14. $1-$ Chlorobutane on reaction with alchloic potash gives:

A. 1 - butene

B. 1 - butanol

C. 1 - butyne

D. 2- butanol

Answer: A

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15. Which of the following is correct order of reactivity

A. Vinyl chloride $>$ Allyl chloride $>$ Propylchloride

B. Propylchloride $>$ Vinyl chloride $>$ Allyl chloride

C. Allyl chloride $>$ Propylchloride $>$ Vinyl chloride

D. Allyl chloride $>$ Vinyl chloride $>$ Propylchloride

Answer: C

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16. Addition of to the aqueous hydrolysis of benzyl chloride dose not increase the rate of the hydrolysis but change only the composition of the final products. This indicates that the reaction is proceeding through

A. S_N1 mechanisms

B. S_N1 mechanisms

C. S_E1 mechanisms

D. S_E2 mechanisms

Answer: A

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17. The correct order of decreasing S_N2 respectively

A. $RCH_2X > R_2CHX > R_3CX$

B. $RCH_2X > R_3CX > R_2CHX$

C. $R_2CHX > R_3CH > RCH_2X$

D. $R_3CHX > R_2CHX > RCH_2X$

Answer: A

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18. Direction iodination of benzene is not possible because

A. iodine is oxidising agent

B. the product C_6H_5I reduced to C_6H_6 by HI

C. HI is unstable

D. ring is deactivated

Answer: B

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19. On treatment of Toluene with CI..in presence of Fe, dark the product formed is

A. o-and p-chloro Toluene

B. benzyl Chloride

C. m-chloro Toluene

D. only p-chloro Toluene

Answer: A

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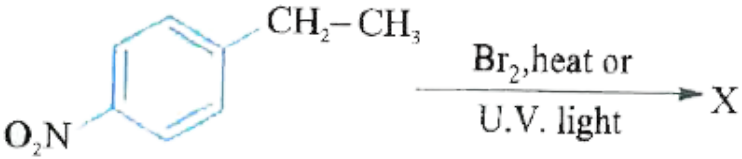
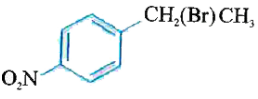
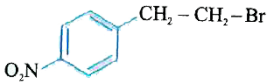
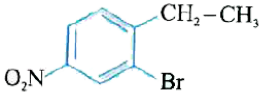
20. The major mono product in the reaction is X.

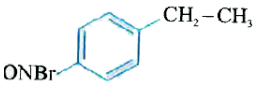


Identify the product X.

A. 

B. 

C. 

D. 

Answer: A

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21. The correct order of increasing boiling points is

A. bromomethane $<$ bromoform $<$ chloromethane $<$ dibromomethan

B. bromoform $<$ dibromomethane $<$ chloroform $<$ chloromethane

C. chloroform $<$ bromoform $<$ Chloromethane $<$ dibromomethane

D. chloromethane $<$ bromomethane , $<$ dibromomethane $<$ bromoform

Answer: D

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

A. the formation of less stable carbonium ion

B. resonance stabilisation

C. inductive effect

D. larger carbon halogen bond

Answer: B

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23. Replacement of CI of chloro benzene to give phenol requires drastic condition but CI of 2. 4-6-trinitro chloro benzene is really replaced because

A. NO_2 makes ring electrons rich at ortho and para positions

B. NO_2 with draws electrons from meta position

C. NO_2 donates electrons at meta position

D. NO_2 withdraws electrons from ortho, para positions

Answer: D

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24. Chloro atom in chlorobenzene is ortho para director because

A. resonance effect predominates over inductive effect

B. inductive effect predominates over resonance effect

C. both inductive effect and resonance effect are evenly matched

D. only resonance effect operates

Answer: A

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25. When aryl halide are treated with sodium in dry ether , it gives a product in which two aryl group are joined together. This reaction is called as

A. Wurtz reaction

B. Fitting reaction

C. Wurtz's Fitting reaction

D. Swarts reaction

Answer: B

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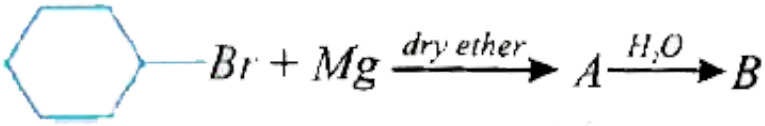
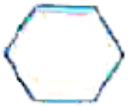
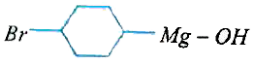
26. 

Identify 'B'.

A. 

B. 

C. 

D. 

Answer: A

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27. The compound used in the production of Freon refrigerant , R - 22 is

A. methylene chloride

B. chloroform

C. iodoform

D. cabon tetra chloride

Answer: B

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28. The compound used as an anaesthetic during surgery is

A. chlorequine

B. halothane

C. chloramphenical

D. thyroxine

Answer: B

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Exercise 3

1. The product C is

$$CH_3.CH_2.C \equiv CH + HCl \to B \xrightarrow{HI} C$$

A. $CH_3CH_2 - \underset{Cl}{\overset{I}{\underset{|}{\overset{|}{C}}}} - CH_3$

B. $CH_3 - \underset{Cl}{\underset{|}{CH}} - CH_2CH_2I$

C. $CH_3 - CH_2 - CH_2 - \overset{\overset{I}{|}}{\underset{\underset{Cl}{|}}{C}} - H$

D. $CH_3 - CH_2 - \overset{\overset{I}{|}}{CH} - CH_2Cl$

Answer: A

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2. For the following

$(i)I^-(ii)Cl^-(iii)Br^-$

the increasing order of nucleophilicity would be:

A. $Br^- < Cl^- < I^-$

B. $I^- < Br^- < Cl^-$

C. $Cl^- < Br^- < I^-$

D. $I^- < Cl^- < Br^-$

Answer: C

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3. In the reaction $CH_3 - \overset{\overset{CH_3}{|}}{C}H - CH(OH) - CH_2 - CH_3 + HI \xrightarrow{\text{Heated}}$

compound will be formed ?

A. $CH_3 - \overset{\overset{CH_3}{|}}{C}H - CH_3OH + CH_3 - CH_2 - I$

B. $CH_3 - \overset{\overset{CH_3}{|}}{C}H - CH_3 - I + CH_3CH_2OH$

C. $CH_3 - \underset{\underset{CH_3}{|}}{C}H - CH_3 + CH_3CH_2OH$

D. $CH_3 - \underset{\underset{CH_3}{|}}{C}H - CH_2OH + CH_3CH_2$

Answer: A

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4. Which of the following undergoes nucleophilic substitution exclusively by S_{N^1} mechanism?

A. Ethyl chloride

B. Isopropyl chloride

C. Chlorobenzene

D. Benzyl chloride

Answer: D

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5. $C_2H_5Cl \xrightarrow[Ag_2O]{\text{Moist}} (A) \xrightarrow[360^\circ C]{Al_2O_3} (B)$

$(B) \xrightarrow{SCl_2} (C)$

In the above sequence of reaction, identify (C)

In the above sequence of reactions. identify

A. Chloretone

B. Chloropicrin

C. Mustard gas

D. Lewisite gas

Answer: C

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6. In which alkyl halide SN^2 mechanism is favoured maximum

A. CH_3Cl

B. CH_3CH_2Cl

C. $(CH_3)_2CHCl$

D. $(CH_3)_3C - Cl$

Answer: A

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7. When alkyl halide is heated with dry Ag_2O. It produces :

A. ester

B. ether

C. ketone

D. alcohol

Answer: B

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8. $H_2C - \underset{\underset{CH_3}{|}}{CH} - CH = CH_2 + HBr \rightarrow A$

A. $CH_3\underset{\underset{CH_3}{|}}{CH} - \underset{\underset{Br}{|}}{CH} - CH_3$

B. $CH_3\underset{\underset{CH_3}{|}}{CH} - CH_2 - CH_3Br$

C. $CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{Br}{|}}{C}} - CH_2CH_3$

D. $CH_3 - \underset{\underset{Br}{|}}{CH} - \underset{\underset{CH_3}{|}}{CH} - CH_3$

Answer: C

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9. In a S_{N^2} substitution reaction of the type

$$R - Br + Cl^- \xrightarrow{\text{DMF}} R - Cl + Br^-$$

Which one of the following has the highest relative rate?

A. CH_3CH_2Br

B. $CH_3 - CH_2 - CH_2Br$

C. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_2Br$

D. $CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_2Br$

Answer: A

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10. Ethyl chloride reats with sodium ethoxide to form a compound 'A' which of the following reactions also yields 'A' ?

A. C_2H_5Cl, $KOH(alc.)\Delta$

B. $2C_2H_5OH$, $conc.\ H_2SO_4$, $140^\circ C$

C. C_2H_5Cl, Mg (dry ether)

D. C_2H_2dil H_2SO_4, $HgSO_4$

Answer: B

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11. In a S_{N^2} substitution reaction of the type

$$R-Br+Cl^- \xrightarrow{\text{DMF}} R-Cl+Br^-$$

Which one of the following has the highest relative rate?

A. $(CH_3)_3C-CH_2Br$

B. CH_3CH_2Br

C. $CH_3CH_2CH_2Br$

D. $(CH_3)_2CH-CH_2Br$

Answer: B

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12. Which one of the following has the highest relative rate ?

A. $RX + KOH \rightarrow ROH + KX$

B. $2RX + 2Na \rightarrow R - R + 2NaX$

C. $RX + Mg \rightarrow RMgX$

D. $RX + Mg \rightarrow RMgX$

Answer: A

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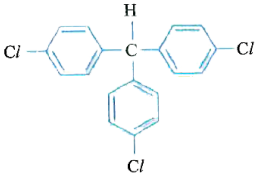
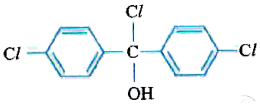
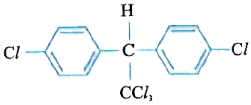
13. Trichloroacetaldehyde, CCl_3CHO reacts with chlorobenzene in presence of sulphuric acid and produces.

A. 

B. 

C. 

D. 

Answer: D

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14. Propionic acid with Br_2/P yields a dibromo product. Its structure would be

A. $CH_2Br - CHBr - COOH$

B. $H - \overset{\overset{Br}{|}}{\underset{\underset{Br}{|}}{C}} - CH_2COOH$

C. $CH_2Br - CH_2 - COBr$

D. $CH_3 - \overset{\overset{Br}{|}}{\underset{\underset{Br}{|}}{C}} - COOH$

Answer: D

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15. Which of the following reactions is an example of nucleophilic substitution reaction?

A. $RX + Mg \rightarrow RMgX$

B. $RX + KOH \rightarrow ROH + KX$

C. $2RX + 2Na \rightarrow R - R + 2NaX$

D. $RX + H_2 \rightarrow RH + HX$

Answer: B

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16. Consider the following reaction $C_2H_5Cl + AgCN \xrightarrow{\text{EtOH} / H_2O} X$ (Major)

Which one of the following statement is true for X?

A. It gives propionic acid on hydrolysis

B. It has a nitrogen linked to ethyl carbon

C. It has an ester function

D. It has cyandide group

Answer: B

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17. The best method for the conversion of an alcohol into an alkyl chloride is by treating the alcohol with :

A. PCl_5

B. $SOCl_2$ in presence of pyridine

C. PCl_3

D. dry HCl in presence anhydrous $ZnCl_2$

Answer: B

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18. The correct order of increasing reactivity of C –X bond towards nucleophile in the following compound is

A. $IV < III < I < II$

B. $II < II < I < IV$

C. $I < II < IV < III$

D. $II < III < I < IV$

Answer: C

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19. Which one is most reactive towards S_N1 reactions ?

A. $C_6H_6C(CH_3)(C_6H_5)Br$

B. $C_6H_5CH_2Br$

C. $C_6H_5CH(C_6H_5)Br$

D. $C_6H_5CH(CH_3)Br$

Answer: A

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20. In the following reaction $C_2H_6C(CH_3)(C_6H_5)Br$

A. $C_6H_5CH_3$

B. $C_6H_5CH_2CH_2C_6H_5$

C. $C_6H_5CH_2OCH_2C_6H_5$

D. $C_6H_5CH_2OH$

Answer: A

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21. Which of the following is the least reactive towards nucleophile?

A. CH_3CH_2Cl

B. CH_3Cl

C. $H_2C = CH - CH_2Cl$

D. C_6H_5Cl

Answer: D

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22. Methyl bromide reacts with AgF to give methyl fluoride and silver bromide. This reaction is called

A. Finkelstein reaction

B. Fitting reaction

C. Swarts reaction

D. Wurtz reaction

Answer: C

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23. The correct order of reactivity of the halides ethyl chloride (I) iso-propyl chloride (II) and benzyl chloride (III) in S_{N^1} reaction is :

A. $II > III > I$

B. $I > II > III$

C. $III > II > I$

D. $II > I > III$

Answer: C

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24. The order of rate of hydrolysis of alkyl halides $1^\circ, 2^\circ, 3^\circ$ and CH_3X by the S_{N^2} pathway is :

A. $1^\circ > 2^\circ > 3^\circ > CH_3X$

B. $CH_3X > 3^\circ > 2^\circ > 1^\circ$

C. $CH_3X > 1^\circ > 2^\circ > 3^\circ$

D. $3^\circ > 2^\circ > 1^\circ > CH_3X$

Answer: C

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25. Which one is most reactive towards S_N1 reactions ?

A. $C_6H_5CH(C_6H_5)Br$

B. $C_6H_5C(CH_3)(C_6H_5)Br$

C. $C_6H_5CH(CH_3)Br$

D. $C_6H_5CH_2Br$

Answer: B

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26. Decreasing order of reactivity in Williamson synthesis orf the following .

Me_3CCH_2Br

$CH_3CH_2CH_2Br$

$CH_2 = CHCH_2CI$

$CH_3CH_2CH_2CI$.

A. $III > II > IV > I$

B. $I > II > IV > III$

C. $II > III > IV > I$

D. $I > III > II > IV$

Answer: A

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27. Which of the following is the least reactive towards nucleophile?

A. $\begin{matrix} CH_3CH_2CH(CH_3)CH_2NH_2 \\ \downarrow NH_3 \\ CH_3CH_2CH(CH_3)CH_2Br \end{matrix}$

B. $CH_3CHO \xrightarrow{HCN} CH_3CH(OH)CN$

C. $CH_3CH=CH_2 \xrightarrow{H_2O/H^+} CH_3CH(OH)CH_3$

D. $RCHO + R'MgX \rightarrow RCH(OH)R'$

Answer: A

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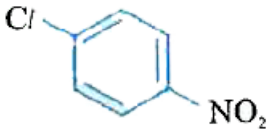
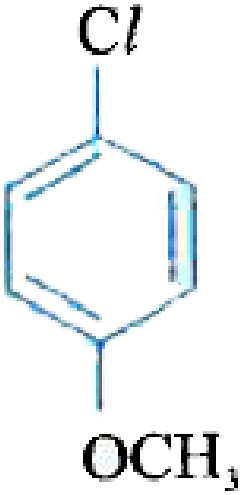
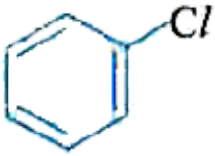
28. Which one is a nucleophile substitution reaction among the following

?

A. 

B. 

C. 

D. 

Answer: A

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29. Methyl bromide reacts with AgF to give methyl fluoride and silver bromide. This reaction is called

A. Fittig reaction

B. Swartz reaction

C. Wurtz reaction

D. Finkelstein reaction

Answer: B

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30. The correct order of reactivity of the halides ethyl chloride (I) iso-propyl chloride (II) and benzyl chloride (III) in S_{N^1} reaction is :

A. $III > II > I$

B. $I > II > III$

C. $II > I > III$

D. $I > III > II$

Answer: A

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31. The order of rate of hydrolysis of alkyl halides $1^\circ, 2^\circ, 3^\circ$ and CH_3X by the S_{N^2} pathway is :

A. $1^\circ > 2^\circ > 3^\circ > CH_3X$

B. $CH_3X > 3^\circ > 2^\circ > 1^\circ$

C. $CH_3X > 1^\circ > 2^\circ > 3^\circ$

D. $3^\circ > 2^\circ > 1^\circ > CH_3X$

Answer: C

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32. Which one is most reactive towards S N.. reaction ?

A. 1 - Bromopentane

B. 1 - Bromo- 2 - methyl butane

C. 1 - Bromo- 3 - methyl butane

D. 2 - Bromo- 2 - methyl butane

Answer: D

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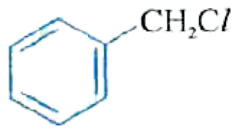
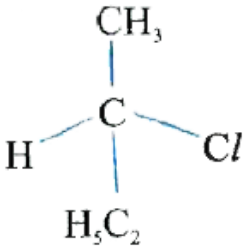
33. Decreasing order of reactivity in Williamson's ether synthesis of following :

A. 

B. $CH_3CH_2CH_2Cl$

C. $H_3C - \overset{\overset{CH_3}{|}}{CH} - CH_2Cl$

D. 

Answer: C

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34. Which one is a nucleophile substitution reaction among the following ?

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35. Which of the following reaction(s) can be used for the preparation of alkyl halides?

(I) $CH_3CH_2OH + HCl \xrightarrow{anhy.\,ZnCl_2}$

(II) $CH_3CH_2OH + HCl \rightarrow$

(III) $(CH_3)_3COH + HCl \rightarrow$

(IV) $(CH_3)_2CHOH + HCl \xrightarrow{anhy.\,ZnCl_2}$

A. (IV) only

B. (III) nad (IV) only

C. (I) , (III) and (IV) only

D. (I) and (II) only

Answer: C

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36. Consider the reaction :

$CH_3CH_2CH_2Br + NaCN \rightarrow CH_3CH_2CH_2CN + NaBr$

This reaction will be the fastest in :

A. Water

B. ethanol

C. methanol

D. N,N' - diemthylformamide (DMF)

Answer: D

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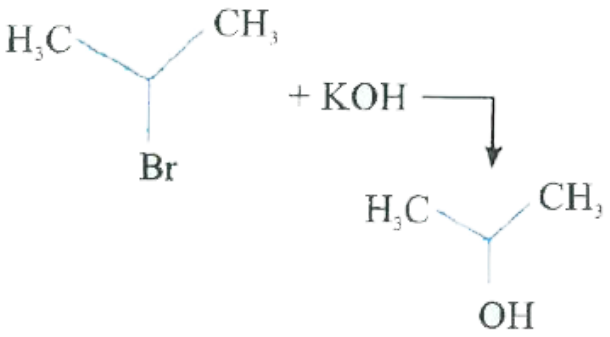
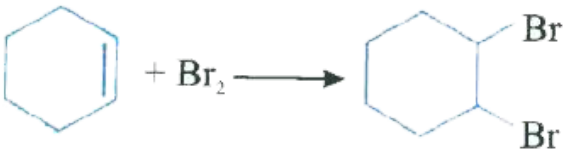
37. For the following reactions :-

a) $CH_3CH_2CH_2Br + KOH \longrightarrow H_2O + KBr + CH_3CH = CH_2$

b) 

c) 

Which of the following statement is correct ?

A. (a) and (b) are elimination reaction and (c) is addition reaction

B. (a) is elimination , (b) is substitution and (c) is addition reaction

C. (a) is elimination , (b) and (c) substitution reaction

D. (a) is substitution , (b) and (c) are addition reaction

Answer: B

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Exercise 4

1. Alkyl halide reacts with an alcoholic solution of ammonia to give a mixture of :

A. 1° and 2° amine

B. $1^\circ, 2^\circ \& 3^\circ$ quaternary

C. $1^{\circ}, 2^{\circ} \& 3^{\circ}$ amines

D. $1^{\circ} \& 3^{\circ}$ amine

Answer: B

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2. Product – I $\xleftarrow{\text{aq KOH}} C_2H_5Br \xrightarrow{\text{alc. KOH}}$

Product – II, the correct Statement is

A. product - I is obtained by the elimination reaction

B. product - I is obtained by the substitution reaction

C. The molecular formula of Product - I is C_2H_4, while the molecular formula of Product - II is C_2H_6O

D. Product -I is the isomer of dimethyl ether, while product -II is the dehydrated compound of product-I

Answer: D

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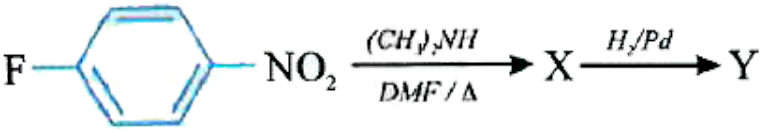
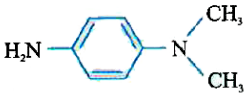
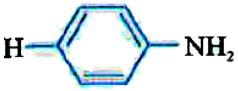
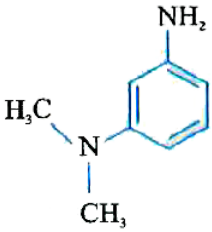
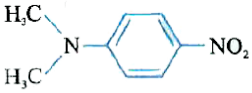
3. 

Y is :

A. 

B. 

C. 

D. 

Answer: A

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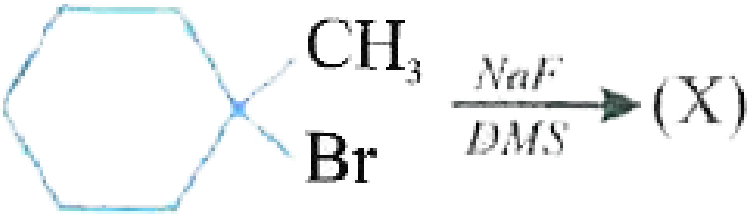
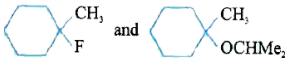


4.

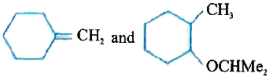
$(CH_3)_2CHCl \xrightarrow[H_2O]{NaF} (Y)$

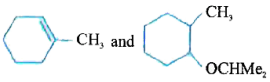
$X + Y \xrightarrow{H^+} (Z)$

Compound (X) and (Z) are respectively

A. 

B. 

C. 

D. 

Answer: B

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5. Chlorobenzene towards hydrolysis 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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6. Following equation illustrates

$$C_6H_5CI + 2NaOH \xrightarrow[200atm]{200-250^\circ C} C_6H_5ONa + NaCI + H_2O$$

A. Dow's process

B. Kolbe's process

C. Carbylamine test

D. Haloform reaction

Answer: A

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7. Alkyl halide on heating with alc. NH_3 in a sealed tube results

A. 1° amino

B. 2° amino

C. 3° amino

D. all of these

Answer: D

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8. Carbylamine is liberated when .....is heated with chloroform and alcoholic potash

A. An aldehyde

B. A primary amine

C. A secondary amine

D. A phenol

Answer: B

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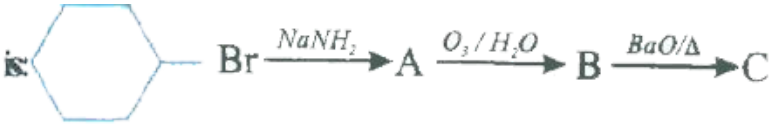
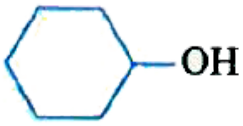
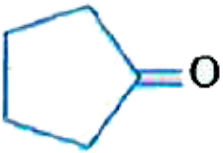
9. End product of following sequence of reaction is

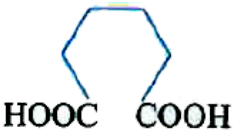


A.

B.



C. 

D. 

Answer: C

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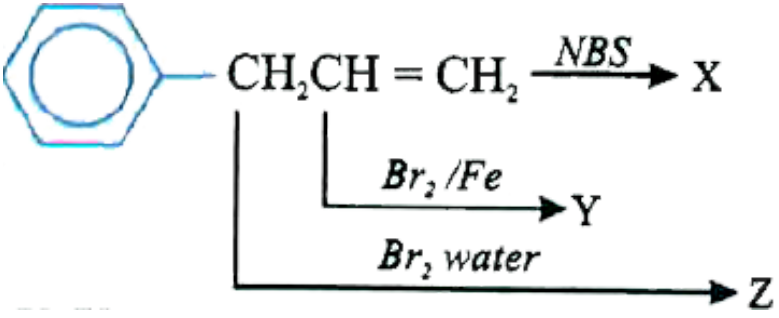
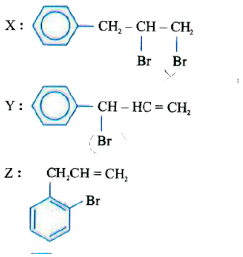
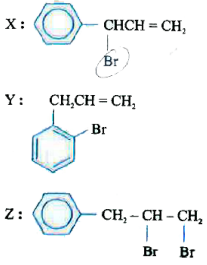
10. 

X, Y and Z, respectively are :

A. 

B. 

C. in all cases X of (1)

D. in all cases Y of (1)

Answer: B

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11. $CH_2 = CHCH_2 = CH_2 \xrightarrow{NBS} A$ A is

A. $H_2C = CH - \underset{Br}{CH}CH = CH_2$

B. $CH_2 = CHCH_2CH = CHBr$

C. $CH_2 = CHCH_2CH = CHBr$

D. $H_2C = CHCH_2 - \underset{Br}{C} = CH$

Answer: B

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12. $\underset{\text{major}}{B} \xleftarrow[CH_3CH_2OH]{CH_3CH_2ONa} CH_3 - \overset{CH_3}{\underset{CH_3}{\overset{|}{\underset{|}{C}}}} - Br \xrightarrow{CH_3CH_2OH} \underset{\text{major}}{A}$

A and B are :

A. $CH_3 - \overset{CH_3}{\underset{CH_3}{\overset{|}{\underset{|}{C}}}} - OCH_2CH_3$ in both cases

B. $CH_3 - \overset{CH_3}{\overset{|}{C}} = CH_2$ in both cases

C. $CH_3 - \overset{CH_3}{\underset{CH_3}{\overset{|}{\underset{|}{C}}}} - OCH_2CH_3$ and $CH_3 - \overset{CH_3}{\underset{CH_2}{\overset{|}{\underset{||}{C}}}}$

D. $CH_3 - \overset{CH_3}{\underset{CH_3}{\overset{|}{\underset{||}{C}}}}$ and $CH_3\overset{CH_3}{\underset{CH_3}{\overset{|}{\underset{|}{C}}}} - OCH_2CH_3$

Answer: C

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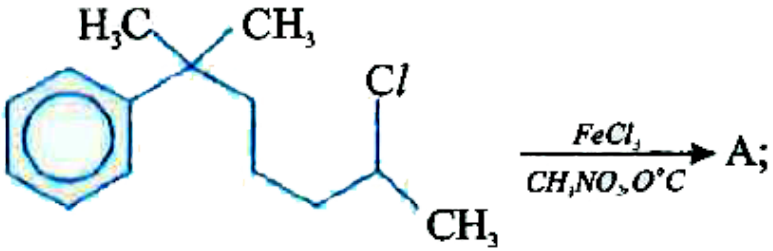
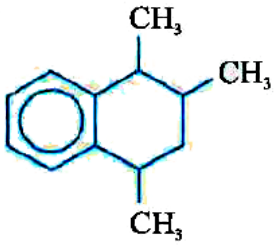
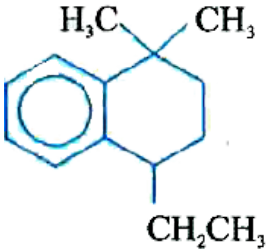


13.



A.



B.

C. Both are correct

D. None is correct

Answer: B

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14. When an alkylhalide is dissolved in ethanol the following reaction beings to occur .

$$R - X + EtOH \xrightarrow{S_N2 \text{mechanism}} R - O - Et + HCI$$

The overall order of reaction is .

A. One

B. Two

C. Three

D. Four

Answer: B

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15. Major product of the following S_N1 reaction is :

$$H_3C - \underset{\underset{Br}{|}}{CH} - \underset{\underset{CH_3}{|}}{CH}CH_3 + \overline{O}C_2H_4 \rightarrow$$

A. $H_3C - \underset{\underset{OC_2H_5}{|}}{CH} - \overset{\overset{CH_3}{|}}{CH} - CH_3$

B. $H_3C - \underset{\underset{CH_3}{|}}{CH} - CH_2CH_2OC_2H_5$

C. $CH_3CH_2 - \overset{\overset{CH_3}{|}}{\underset{\underset{OC_2H_5}{|}}{C}}CH_3$

D. $CH_3CH = \overset{\overset{CH_3}{|}}{C}CH_5$

Answer: C

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16. Ethylene reacts with bromine to from

A. Chloromethane

B. Ethylene dibromide

C. Cyclohexane

D. 1 -bromo propane

Answer: B

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17. The reactivities of methyl chloride, propyl chloride and chlorobenzene towards solvolysis are in the order

A. Methyl choride $>$ propyl chloride $>$ chlorobenzene

B. Propyl chloride $>$ Methyl choride $>$ chlorobenzene

C. Methyl choride $>$ chlorobenzene $>$ propyl chloride

D. Chlorobenzene $>$ propyl chloride $>$ Methyl choride

Answer: A

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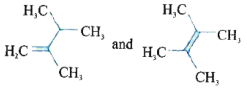
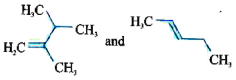
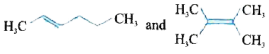
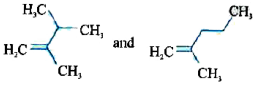
18. An alkyl halide of formula $C_6H_{13}CI$ on treatment with potassium t-butoxide given two isomeric alkanes (C_6H_{12}) . Both alkenes on

hydrogenation give 2,3 dimethyl butane. Isomeric alkanes are

A. 

B. 

C. 

D. 

Answer: A

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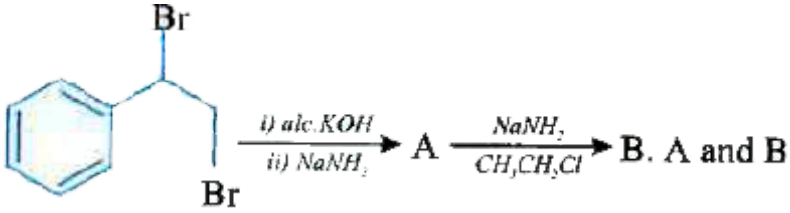
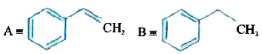
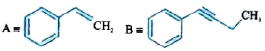
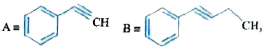
19. 

. A and B

A. 

B. 

C. 

D. None of these

Answer: C

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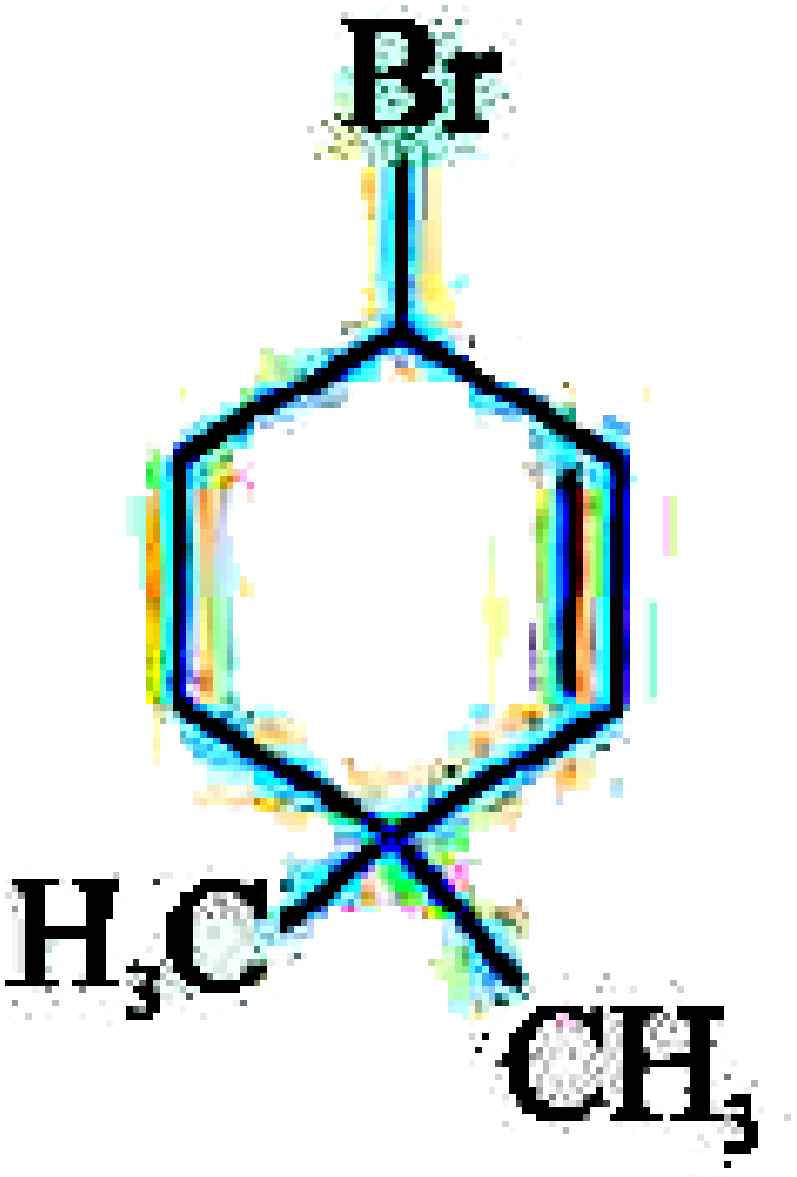
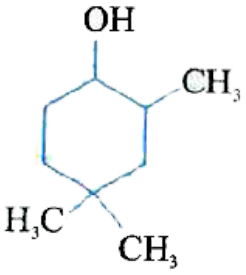


20. on

treatment with aqueous KOH

A.



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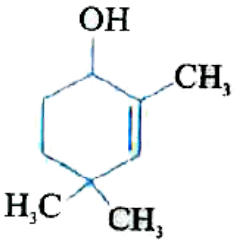

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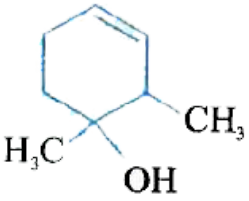
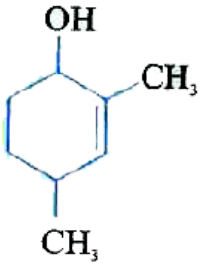


D.



Answer: C

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21. 3 methyl -2- pentene on reaction with HOCI gives

A. 3-chloro-3-methyl pentanol-2

B. 2,3-dichoro-3-methyl pentane

C. 2-chloro-3-methyl pentanol-3

D. 2,3 dimethyl butanol-2

Answer: C

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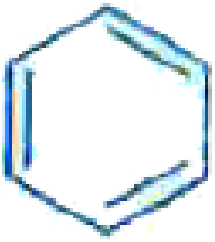
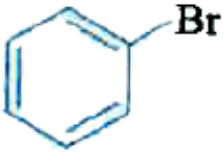
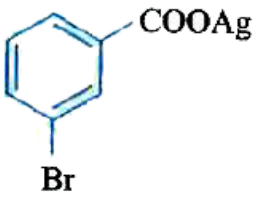
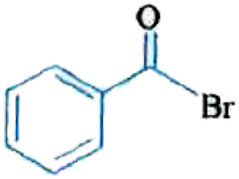
22. Silver benzonate will react with bromine in acetone to give

A. 

B. 

C. 

D. 

Answer: B

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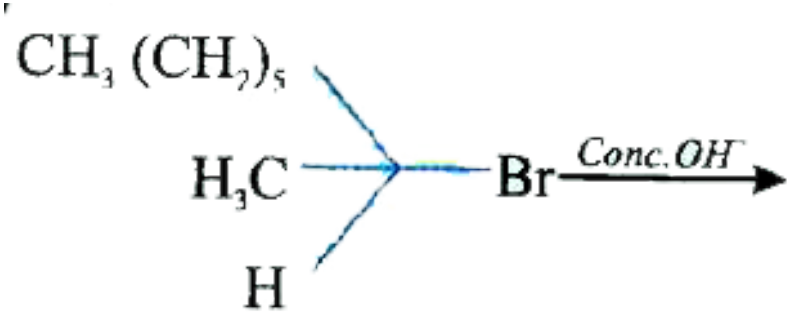
23. The reaction described below is



$CH_3(CH_2)_4CH = CH - CH_3$

A. S_E1

B. E^2

C. S_N1

D. S_E2

Answer: B

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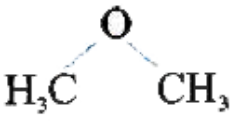
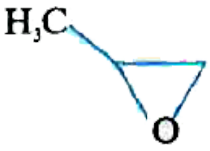
24. Which of the following ether will give always S_N2 mechanism in acidie as well as basic conditions ?

A. 

B. $C_6H_5 - CH_2 - O - CH_3$

C. 

D. All of these

Answer: A

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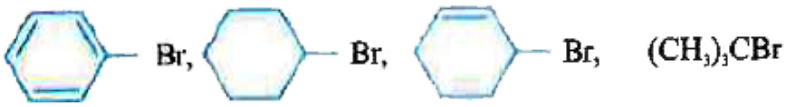
25. Order of hydrolysis of the following in increasing order is



(I) (II) (III) (IV)

A. $I < II < III < IV$

B. $I < IV < II < III$

C. $IV < III < II < I$

D. $I < II < IV < III$

Answer: B

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26. The addition of HBr is the easiest with

A. $CH_2 = CHCI$

B. $CICH = CHCI$

C. $CH_3 - CH = CH_2$

D. $(CH_3)_2C = CH_2$

Answer: D

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27. Which one of the following will produce a primary alcohol by reacting with CH_3MgI?

A. Acetone

B. Methyl cyanide

C. Ethylene oxide

D. Ethyl acetate

Answer: C

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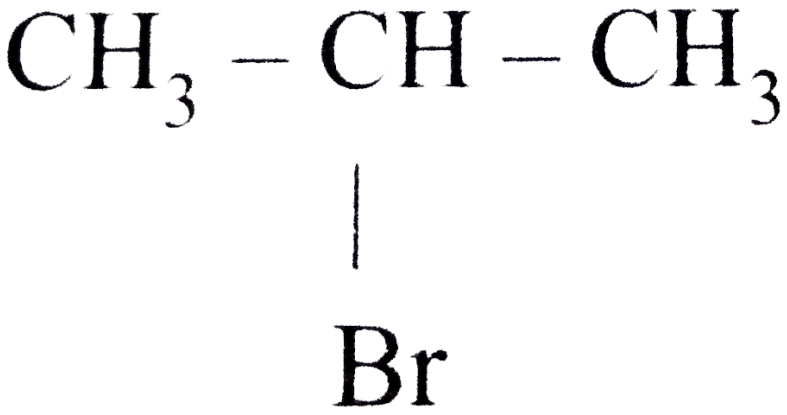
28. Identify the set of reagents / reaction conditions $'X'$ and $'Y'$ in the following set of transformations.

$CH_3 - CH_2CH_2Br \xrightarrow{X} Product \xrightarrow{Y}$



A. X = Dilute aqueous naOH, $20^\circ C$,

Y = HBr/acetic acid , $20^\circ C$

B. X = Concentrated alcoholic NaOH, $80^\circ C$,

Y = HBr/acetic acid , $20^\circ C$,

C. X = Concentrated alcoholic NaOH, $80^\circ C$,

Y = HBr / in presence of H_2O_2

D. X = Dilute agueous NaOH, $20^\circ C$, $Y = HBr$ / in presence of H_2O_2.

Answer: B

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29. The order of reactivity of following alcohols with halogen acids is.....

(A) $CH_3CH_2 - CH_2 - OH$ (B) $CH_{3CH_2} - \underset{CH_3}{\overset{|}{\text{CH}}} - OH$

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

A. $I > II > III$

B. $III > II > I$

C. $II > I > III$

D. $I > III > II$

Answer: B

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

Thinking process

To solve this problem, students keep in mind that tertiary alcohol being most reactive react at room temperature.

A. $CH_3CH_2-CH_2-OH$

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

C. $CH_3CH_2-\underset{\underset{CH_3}{|}}{CH}-C_2HOH$

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

Answer: D

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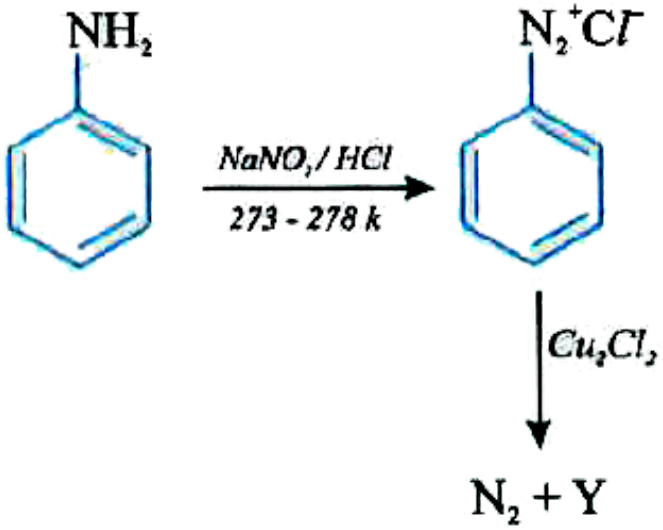
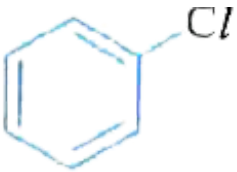
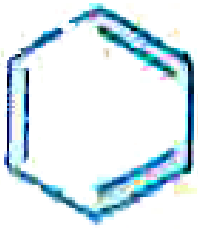
31. Identify the compound Y in the following reaction.

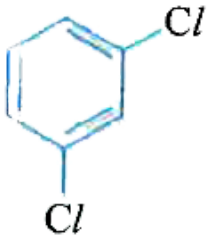




A.



B.



C.

D.

Answer: A

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32. 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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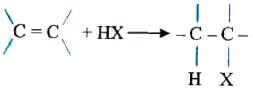
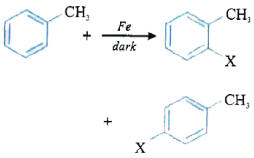
33. Which of the following is halogen exchange reaction ?

A. $RX + NaI \rightarrow RI + NaX$

B. 

C. $R - OH + HX \xrightarrow{ZaCl_2} R - X + H_2O$

D. 

Answer: A

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34. 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 ga in the presence of iron in dark

Answer: A

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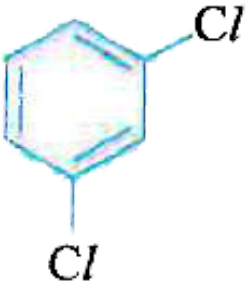
35. Arrange the following compounds in the increasing order is their densities.

a) 

b) 

c) 

d) 

A. $a < b < c < d$

B. $a < c < d < b$

C. $d < c < b < a$

D. $b < d < c < a$

Answer: B

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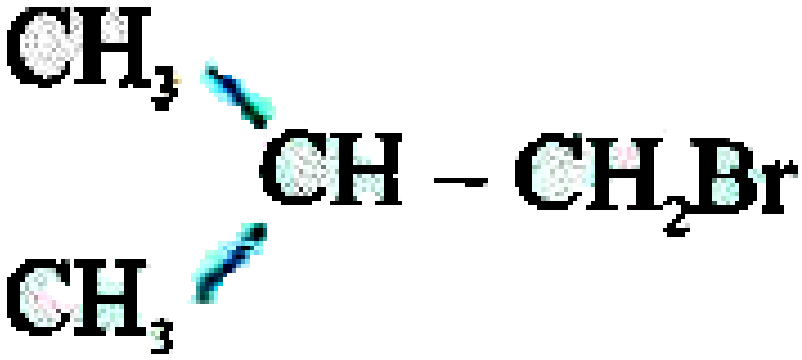
36. Arrange the following is compounds in the increasing order is their boiling points



(b)

$CH_3CH_2CH_2CH_2Br$

(c) $H_3C - \underset{\underset{Br}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_3$

A. $b < a < c$

B. $a < b < c$

C. $c < a < b$

D. $c < b < a$

Answer: C

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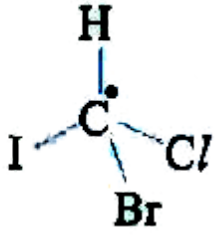
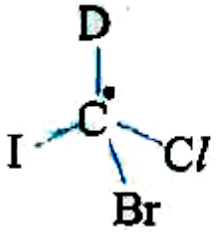
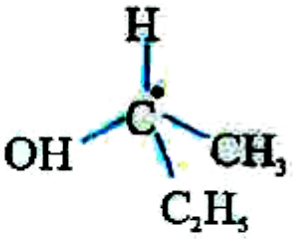
37. Which of the following structure is enantiomeric with the molecule (A) given below :



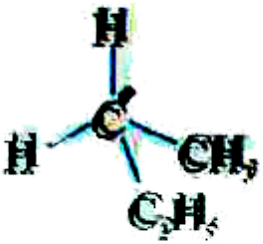
(a)



(b)



(c)



(d)

A. $(a), (b), (c), (d)$

B. $(a), (b), (c)$

C. $(b), (c), (d)$

D. $(a), (c), (d)$

Answer: B

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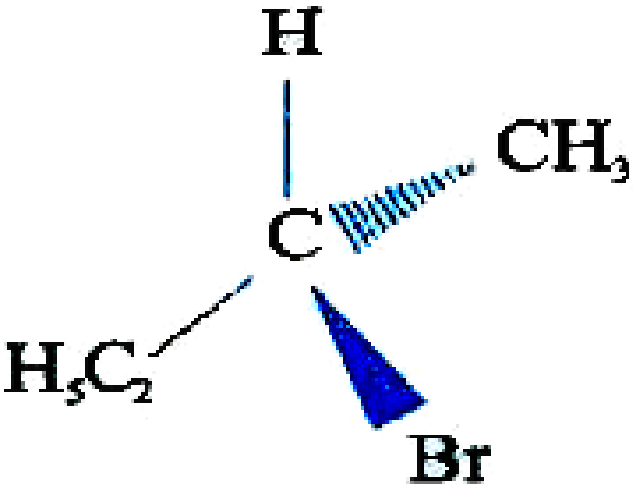
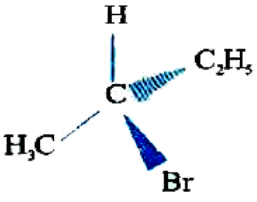
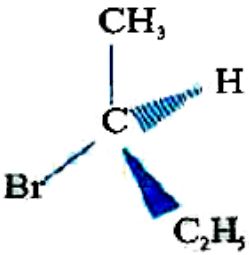
38. Which of the following structures is enantiomeric with the molecule (A) given below:



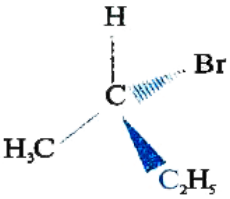
A.



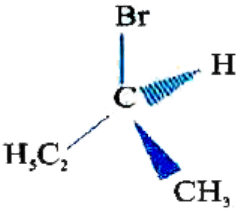
B.



C.



D.



Answer: A

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39. 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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40. The position of -Br in the compound in $CH_3CH = CH(Br)(CH_3)_2$ can be classified as

A. Allyl

B. Aryl

C. Vinyl

D. Secondary

Answer: A

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41. Cholorobenzene 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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42. Ethylidene chloride is a/an.....

A. vic - dihalide

B. gem - dihalide

C. allylic acid

D. vinylic halide

Answer: B

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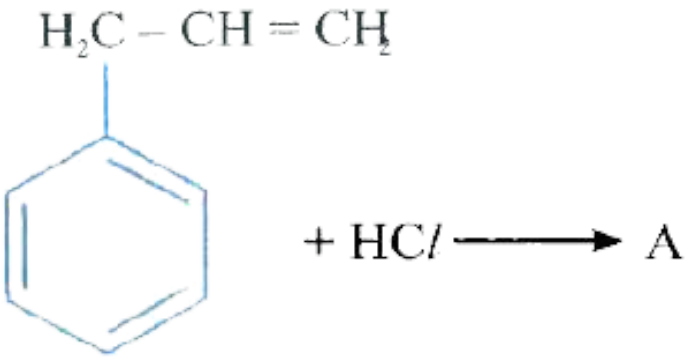
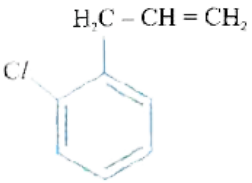
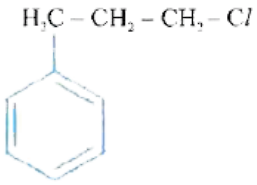
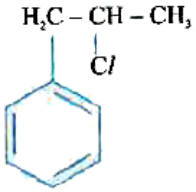
43. What is 'A' in the following reaction ?

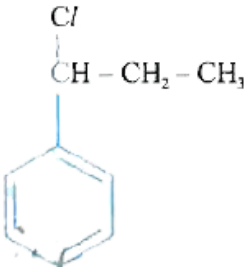


A.



B. 

C. 

D. 

Answer: D

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44. A primary alkyl halide would prefer to undergo :-

A. S_N1 reaction

B. S_N2 reaction

C. α Elimination

D. Racemisation

Answer: B

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45. Which of the following alkyl halides will undergo S_N1 reaction most readily ?

A. $(CH)_3C - F$

B. $(CH_3)_3C - CI$

C. $(CH_3)_3C - Br$

D. $(CH_3)_3C - I$

Answer: D

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46. Which 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-2methylethan

C. 1- Bromo-2-methylbutane

D. 2-Methyl-2-bromobutane

Answer: C

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

A. 1 - Bromo-1 ,1 -diethylmethane

B. 3-Bromopentane

C. 1 - Bromo-I-ethylpropane

D. 1 -Bromopentane

Answer: B

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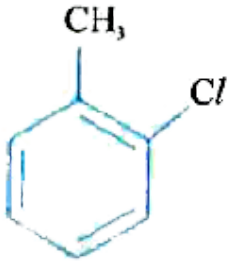
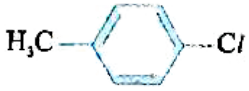
48. The reaction of toluene with chlorine in the presence of iron and in the absence of light yields .....

A. 

B. 

C. 

D. Mixture of (ii) and (iii)

Answer: D

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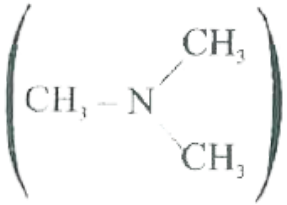
49. Chloromethane on treatment with excess of ammonia yields mainly

A. N,N-Dimethylmethanamine 

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

C. Methanamine $(CH_3 - NH_2)$

D. Mixture containing all these in equal proportion

Answer: C

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50. 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-Bromopropene

D. 2-Bromopropan-2-ol

Answer: A

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51. Reactions of $C_6H_5CH_2Br$ with aqueous sodium hydroxide follows.....

A. $SN1$ mechanism

B. S_N2 .mechanism

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

D. Saytzeff rule

Answer: A

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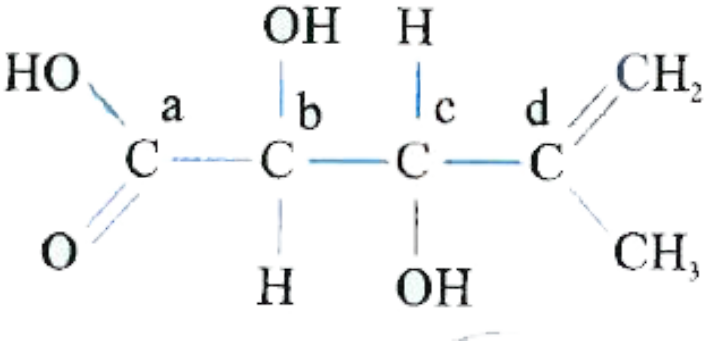
52. Which of the carbon atoms present in the molecule given below are asymmetric ?



A. a,b,c,d

B. b,c

C. b,c

D. a,c

Answer: B

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53. Which of the following compounds will give racemic mixture on nucleophillc substitution.

(a) $H_3C - \underset{\underset{C_2H_5}{|}}{CH} - Br$ (b) $CH_3 - \overset{\overset{Br}{|}}{\underset{\underset{C_2H_5}{|}}{C}} - CH_3$

(c) $CH_2 - \underset{\underset{C_2H_5}{|}}{CH} - CH_2Br$

A. a

B. a,b,c

C. b,c

D. a,c

Answer: A

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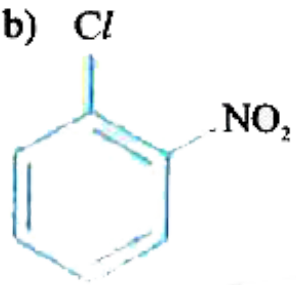
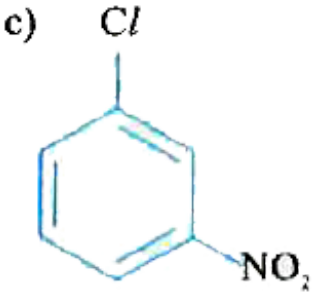
54. arrange the compounds in increasing order of rate of reaction towards nucleophlic substitution.

a) 

b) 

c) 

A. $(a) < (b) < (c)$

B. $(c) < (b) < (a)$

C. $(a) < (b) < (a)$

D. $(b) < (c) < (a)$

Answer: C

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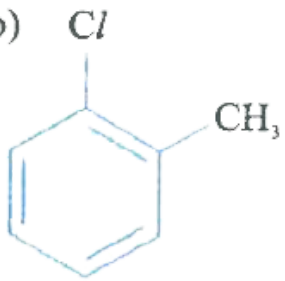
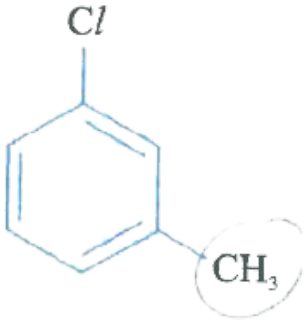
55. arrange the compounds in increasing order of rate of reaction towards nucleophlic substitution.

a) 

b) 

c) 

A. $(a) < (b) < (c)$

B. $(a) < (c) < (b)$

C. $(c) < (b) < (a)$

D. $(b) < (c) < (a)$

Answer: D

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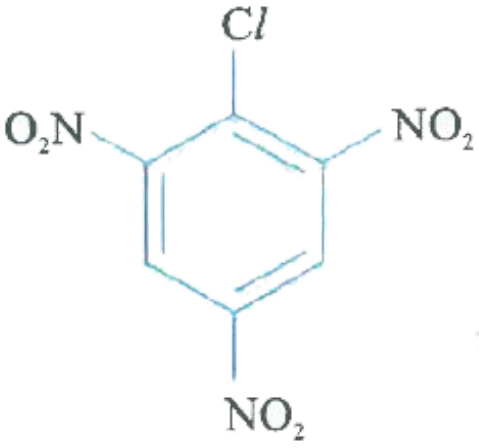
56. arrange the compounds in increasing order of rate of reaction towards nucleophlic substitution.

a)

b)

c)



A. $(c) < (b) < (a)$

B. $(b) < (c) < (a)$

C. $(a) < (c) < (b)$

D. $(a) < (b) < (c)$

Answer: D

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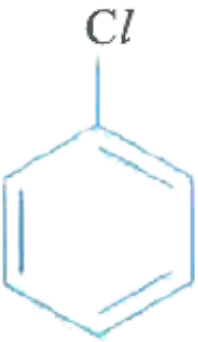
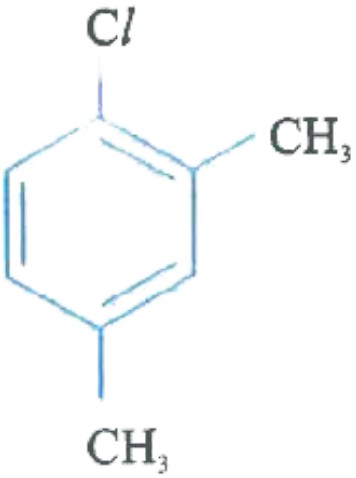
57. arrange the compounds in increasing order of rate of reaction towards nucleophlic substitution.

a)



b)

c)



A. $(a) < (b) < (c)$

B. $(b) < (a) < (c)$

C. $(c) < (b) < (a)$

D. $(a) < (c) < (b)$

Answer: C

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

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

A. Butane $<$ -I Chlorobutane $<$ I-Bromobutane $<$ I-Iodobutane

B. Iodobutane $<$ I- Bromobutane $<$ I- Chlorobutane $<$ Butane

C. Butane $<$ I- Iodobutane $<$ I - Bromobutane $<$ I -Chlorobutane

D. Butane $<$ I- Chlorobutane $<$ Iodobutane $<$ I- Bromobutane

Answer: A

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

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

A. Bromobenzene < I - Bromobutane < I-Bromopropane < I-Bromoethane

B. Bromobenzene < I -Bromoethane < I- Bromopropane < I-Bromobutane

C. I-Bromopropane < I-Bromobutane Bromoethane < Bromobenzene

D. Bromoethane < I-Bromopropane < I - Bromobutane < Bromobenzene

Answer: D

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