



## CHEMISTRY

### BOOKS - TARGET CHEMISTRY (HINGLISH)

#### HALOGEN DERIVATIVES OF ALKANES AND ARENES

##### Classical Thinking

1. When one or more hydrogen atoms of an aromatic hydrocarbon are replaced by the corresponding number of halogen atoms, the resulting compound are called as

- A. halogen derivatives of alkanes
- B. halogen derivatives of alkenes
- C. halogen derivatives of alkynes
- D. halogen derivatives of arenes

**Answer: D**

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2. Alkyl halides are used as \_\_\_\_\_.

- A. refrigerants
- B. dry cleaning agents
- C. insecticides
- D. all of these

**Answer: D**

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3. Halogen derivatives of alkanes are classified according to \_\_\_\_\_.

- A. the nature of the halogen group present in the molecule

- B. the number of halogen atoms in the molecule
- C. the number of pi bonds in the molecule
- D. the number of carbon atoms in the molecule

**Answer: B**

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4. Haloforms are trihalogen derivatives of \_\_\_\_\_.

- A.  $C_2H_6$
- B.  $CH_4$
- C.  $C_3H_8$
- D.  $C_2H_4$

**Answer: B**

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5. The general molecular formula of alkyl halides are types of \_\_\_\_\_ derivatives of alkyl halides.

A. R-X-R

B.  $C_nH_{2n}X_2$

C.  $C_nH_{2n}X$

D.  $C_nH_{2n+1}X$

**Answer: D**



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6. Primary, secondary and tertiary of alkyl halides is \_\_\_\_\_.

A. monohalogen

B. dihalogen

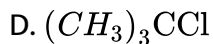
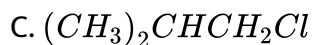
C. trihalogen

D. tetrahalogen

Answer: A

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7. Which of the following is a primary alkyl halide ?



Answer: C

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8. Which of the following is a 2° alkyl halide ?



B. Isobutyl chloride

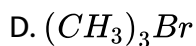
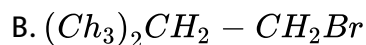
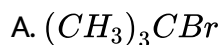
C. n-Propyl chloride

D. n-Butyl chloride

**Answer: A**

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9. tert-Butyl bromide can be written as \_\_\_\_\_.



**Answer: A**

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10. The compound  $H - \underset{\begin{array}{c} | \\ H \end{array}}{\overset{\begin{array}{c} H \\ | \end{array}}{C}} - \underset{\begin{array}{c} | \\ CH_3 \end{array}}{\overset{\begin{array}{c} CH_3 \\ | \end{array}}{C}} - Cl$  has its IUPAC name as \_\_\_\_\_ .

- A. 1-Chloro-1, 1-dimethylhexane
- B. 2-Chloro-2-methylpropane
- C. tert-Butyl chloride
- D. 2-Methyl-2-propyl chloride

**Answer: B**

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11. IUPAC name of  $C_2H_5 - CH_2 - \underset{\begin{array}{c} | \\ C_2H_5 \end{array}}{\overset{\begin{array}{c} Br \\ | \end{array}}{C}} - CH_3$  is \_\_\_\_\_ .

- A. 3-Bromo-3-methylhexane
- B. 3-Bromo-2-methylpropane
- C. 2-Ethyl-3-bromopentane

D. 2-Bromo-3-ethylpentane

**Answer: A**

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12. Isobutyl chloride in IUPAC is named as \_\_\_\_\_.

A. 1-Chloro-2-methylbutane

B. 1-Chloro-2-methylpropane

C. 2-Chlorobutane

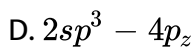
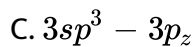
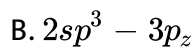
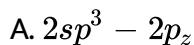
D. 2-Chloro-2-methylpropane

**Answer: B**

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13. In  $CH_3 - CH_2 - CH_2Br$ ,  $C - Br$  bond is formed by the overlapping of \_\_\_\_\_.



**Answer: D**



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14. Chlorination of an alkane takes place, in the presence of \_\_\_\_\_.

A. infrared light

B. diffused sunlight

C.  $\gamma$  - rays

D.  $\beta$ -rays

**Answer: B**

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15. Alkanes CANNOT be directly iodinated because \_\_\_\_\_.

- A. the reaction is too slow
- B. the reaction is reversible
- C.  $I_2$  is a weak reagent
- D. alkanes do not react with  $I_2$

**Answer: B**

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16. Iodination of an alkane is carried out in presence of

- A. acts as a source of iodine

- B. acts as an oxidising agent
- C. acts as a reducing agent
- D. promotes energy of the iodine molecules

**Answer: B**

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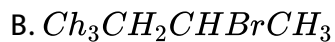
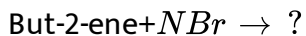
17. According to Markownikoff's rule, negative part of the reagent is added , to that carbon atom of alkene\_\_\_\_\_.

- A. which carried lesser number of carbon atoms
- B. which carries more number of hydrogen atoms
- C. which carried lesser number of hydrogen atoms
- D. which carries no hydrogen atoms

**Answer: C**

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18. The product of the reaction



D. both (A) and (B)

Answer: D



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19.  $A + \text{HBr} \rightarrow \text{C}_5\text{H}_{11}\text{Br}$ . A is most likely to be an \_\_\_\_\_.

A. alkane

B. alkene

C. alkyne

D. arene

**Answer: B**



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20. Anti-Markownikoff's addition of HBr takes place in the presence of \_\_\_\_\_.

A.  $CaCO_3$

B. NaOH

C.  $H_2O_2$

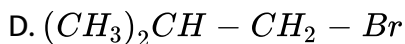
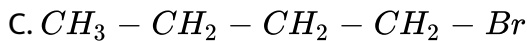
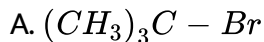
D. HCl

**Answer: C**



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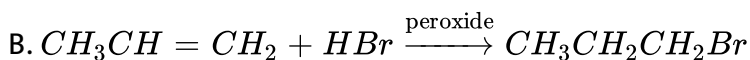
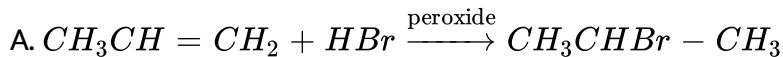
21. But-1-ene reacts with HBr in the presence of peroxide and forms \_\_\_\_\_.



Answer: C

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22. Which of the following reaction is Anti-Markownikoff's addition ?



D. Both (B) and (C)

**Answer: B**



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**23.** The reaction is ,

$R - CH_2 - OH + HCl \rightarrow R - CH_2 - Cl + H_2O$ . For the completion of the reaction , \_\_\_\_\_ is used .

A. conc.  $H_2SO_4$

B.  $CaCl_2$

C. excess of water

D. anhydrous  $ZnCl_2$

**Answer: D**



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24. When ethanol is treated with potassium bromide and concentrated  $H_2SO_4$ , \_\_\_\_\_ is produced.

- A. ethyl bromide
- B. ethyl hydrogen sulphate
- C. ethylene
- D. ethane

**Answer: A**



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25. The reaction of phosphorus tribromide with ethanol gives \_\_\_\_\_.

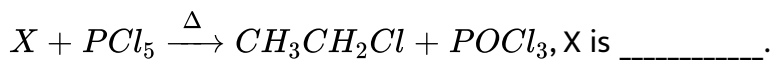
- A. monohalogen derivative
- B. dihalogen derivative
- C. bromine gas
- D. alkene



**Answer: A**

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**26.** In the reaction ,



A. ethanol

B. ethanal

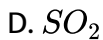
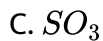
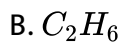
C. ethane

D. methane

**Answer: A**

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**27.** Ethyl alcohol on treating with thionyl chloride gives off which gas ?



**Answer: D**



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28.  $C_3H_8 + Cl_2 \xrightarrow{\text{Light}} C_3H_7Cl + HCl$  is an example of which of the following types of reactions ?

A. Substitution

B. Elimination

C. Addition

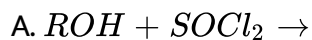
D. Rearrangement

**Answer: A**



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29. Best method of preparing alkyl chloride is



Answer: D



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30. Alkyl halides are \_\_\_\_\_ in nature.

A. polar

B. non-polar

C. ionic

D. acidic

**Answer: A**

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**31.** For a given alkyl group , the boiling points of alkyl halides follow the order:



**Answer: A**

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32. Which of the following alkyl chloride will have the least boiling point ?

- A. Ethyl chloride
- B. Propyl chloride
- C. Butyl chloride
- D. Methyl chloride

**Answer: D**



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33. Which of the following statement is WRONG ?

- A. Lower alkyl halides are either colourless gases or volatile liquids.
- B. Alkyl halides are completely soluble in water and in organic solvents.

C. In case of isomeric alkyl halides, the boiling point decreases with increase in branching.

D. The higher alkyl halides are colourless solids.

**Answer: B**

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**34.** Which of the following statement is FALSE for alkyl halides ?

A. They are less reactive by nature.

B. They give nucleophilic substitution reactions.

C. The halide group is easily replaced by different functional groups.

D. All of these

**Answer: A**

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35. The reactivity of alkyl halides depend upon \_\_\_\_\_.

A. the nature of halogen atom

B. the nature of alkyl group

C. both (A) and (B)

D. none of these

**Answer: C**



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36. Conversion of an alkyl halide to alcohol can be done by \_\_\_\_\_.

A. oxidation

B. hydration

C. alkaline hydrolysis

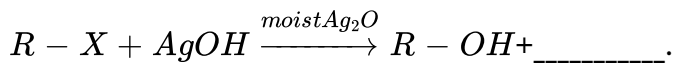
D. acidic hydrolysis

**Answer: C**



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**37.** What is formed by the following reaction ?



A. AgOH

B.  $H_2O$

C. AgX

D.  $Ag_2O$

**Answer: C**



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**38.** Butanenitrile may be prepared by heating



A.  $CH_3CH_2CH_2OH$  and  $KNO_3$

B.  $CH_3CH_2CH_2Cl$  and  $KCN$

C.  $CH_3CH_2CH_2CH_2OH$  and  $KCN$

D.  $CH_3CH_2CH_2CH_2Cl$  and  $KNO_3$

**Answer: B**

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**39.** Which of the following compounds has an offensive odour ?

A. R-NC

B. R-CN

C. R-O-Na

D. R-O-R

**Answer: A**

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40. To get alkyl isocyanide from alkyl halide, the latter is heated with \_\_\_\_\_.

A. aq. KCN

B. AgCN

C. alc. KCN

D. All of these

**Answer: B**



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41. The reaction of ammonia with methyl chloride in the presence of alcoholic KOH is called \_\_\_\_\_ reaction.

A. ammonolysis

B. hydrolysis

C. isocyanide

D. Wurtz

**Answer: A**

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42. When  $C_2H_5Br$  is treated with excess amount of alcoholic  $NH_3$  the major product obtained is \_\_\_\_\_.

A. ethylamine

B. diethylamine

C. triethylamine

D. tetraethyl ammonium bromide

**Answer: A**

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43. When sodium salt of ethanol is treated with ethyl bromide, the product formed is :

- A. methoxyethane
- B. ethoxymethane
- C. diethyl ketone
- D. diethyl ether

**Answer: D**



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44. Methyl bromide on reacting with silver acetate gives \_\_\_\_\_.

- A. acetic acid
- B. acetyl chloride
- C. methyl acetate
- D. acetaldehyde

**Answer: C**

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**45.** Isopropyl bromide when heated with alcoholic KOH gives propene. The reaction is \_\_\_\_\_.

- A. Substitution
- B. Elimination
- C. Addition
- D. cyclisation

**Answer: B**

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**46.** Dehydrohalogenation is a process in which \_\_\_\_\_.

- A. hydrogen is removed and halogen is added.
- B. both hydrogen and halogen are removed
- C. dehalogenation occurs in presence of hydrogen
- D. dehydration occurs in the presence of halogen

**Answer: B**

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47. n-Propyl bromide on treatment with ethanolic potassium hydroxide produces \_\_\_\_\_.

- A. propanal
- B. propene
- C. propyne
- D. propanol

**Answer: B**

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48. Treatment of sec-butyl bromide with alcoholic KOH forms \_\_\_\_\_.

- A. but-1-ene only
- B. but-2-ene only
- C. butan-2-ol
- D. a mixture of but-1-ene and but-2-ene

**Answer: D**

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49. It is easier to prepare alkenes by dehydrohalogenation of \_\_\_\_\_.

- A. alkyl bromide
- B. alkyl iodine
- C. alkyl chloride

D. alkyl fluoride

**Answer: B**

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50. In elimination reaction, H atoms from adjacent carbon atoms, having less number of hydrogen atom is preferentially removed. This behaviour is ruled by \_\_\_\_\_.

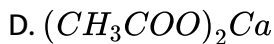
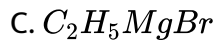
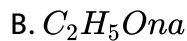
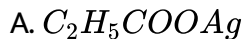
- A. Markownikoff's rule
- B. Saytzeff's rule
- C. Williamson's synthesis
- D. peroxide effect

**Answer: B**

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51. Which one is an organometallic compound ?



Answer: C



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52. Alkyl halides can be converted into Grignard reagent by \_\_\_\_\_.

A. boiling them with magnesium ribbon in alcoholic solution

B. warming them with magnesium powder in dry ether

C. warming them with  $MgCl_2$

D. refluxing them with  $MgCl_2$  solution

**Answer: B**



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53. When n-butyl magnesium bromide is treated with water, the product is \_\_\_\_\_.

A. isobutane

B. n-butane

C. n-butyl alcohol

D. isobutyl alcohol

**Answer: B**



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54. Alkyl halides are used for the preparation of \_\_\_\_\_.

- A. alkanes
- B. alkenes
- C. alcohols
- D. All of these

**Answer: D**

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55. A ray of light consisting of a single wavelength vibrating in all planes perpendicular to the direction of propagation is called\_\_\_\_\_.

- A. plane polarized
- B. polarized light
- C. monochromatic light
- D. ultraviolet light

**Answer: C**



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56. Ordinary light is converted into plane polarized light by passing through a \_\_\_\_\_.

- A. nickel prism
- B. glass prism
- C. Nicol prism
- D. glass slab

**Answer: C**



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57. The property by virtue of which a compound can rotate plane polarized light is known as

- A. photolysis

B. phosphorescence

C. optical activity

D. polarization

**Answer: C**



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58. d- and l-forms of an optically active compound differ in \_\_\_\_\_.

A. boiling points

B. melting points

C. specific rotation

D. specific gravity

**Answer: C**



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59. Wherever an optically active compound is prepared in the laboratory, the product formed in most of the cases is a \_\_\_\_\_.

- A. basic mixture
- B. racemic mixture
- C. homogeneous mixture
- D. true mixture

**Answer: B**



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60. A molecule is said to be chiral if it \_\_\_\_\_.

- A. contains a plane of symmetry
- B. contains a centre of symmetry
- C. cannot be superimposed on its mirror image
- D. exists as cis-trans isomers

**Answer: C**

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**61.** Which of the following letter is chiral ?

A. M

B. O

C. V

D. P

**Answer: D**

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**62.** The necessary and sufficient condition for a molecule to exhibit optical activity is \_\_\_\_\_.

- A. molecular symmetry
- B. molecular asymmetry or chirality
- C. presence of unsaturated carbon atoms
- D. tetrahedral nature of carbon atoms

**Answer: B**

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**63.** Lactic acid is a classical example of \_\_\_\_\_.

- A. position isomerism
- B. geometrical isomerism
- C. optical isomerism
- D. chain isomerism

**Answer: C**

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64. Which of the following halide is capable of exhibiting enantiomerism ?

- A. Ethyl chlorine
- B. Isopropyl bromide
- C. sec-Butyl iodine
- D. tert-Butyl chloride

**Answer: C**



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65. Molecularity of the reaction is determined by \_\_\_\_\_.

- A. one molecule
- B. two molecule
- C. three molecules

D. total number of molecules in R.D.S(Rate determining step)

**Answer: D**

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**66.** Which of the reaction are most common in alkyl halides

A. Nucleophilic substitution

B. Nucleophilic addition

C. Electrophilic addition

D. Electrophilic substitution

**Answer: A**

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67. In  $S_N2$  mechanism, the rate of reaction is proportional to concentration of \_\_\_\_\_.

- A. only substrate
- B. only reagent
- C. both substrate and reagent
- D. electrophile

**Answer: C**



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68. Amongst the following, which is/are TRUE for  $S_N2$  reaction ?

- A. The rate of reaction is independent of the concentration of the nucleophile.
- B. The nucleophile attacks the carbon atom on the side of the molecule opposite to the group being displaced

C. The reaction proceeds with simultaneous bond formation and bond rupture.

D. Both (B) and (C)

**Answer: D**



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69. Transition state is defined as the state of a reaction , which contains\_\_\_\_\_.

A. minimum energy

B. maximum energy

C. zero energy

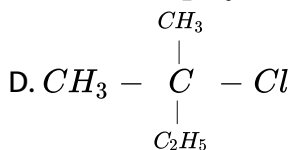
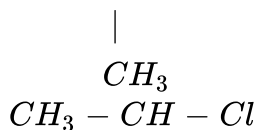
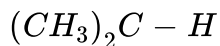
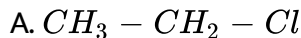
D. Kinetic energy

**Answer: B**



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70. Which one of the following compounds most readily undergoes substitution by  $S_N2$  mechanism ?



Answer: C



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71. The  $S_N1$  mechanism for the hydrolysis of an alkyl halide to an alcohol involves the formation of \_\_\_\_\_.

- A. carbonium ion
- B. pentavalent carbon in the transition state
- C. carbanion
- D. free radical

**Answer: A**

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72. During  $S_N1$  reaction mechanism of alkyl halides, the change observed is \_\_\_\_\_.

- A. retention of configuration
- B. inversion of configuration
- C. both retention and inversion of configuration
- D. retention of geometry

**Answer: C**

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73. The reactivity of various types of alkyl halides towards  $S_N1$  reaction is \_\_\_\_\_.

- A. primary > secondary > tertiary
- B. secondary > primary > tertiary
- C. tertiary > secondary > primary
- D. secondary > tertiary > primary

**Answer: C**

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74.  $S_N1$  reaction is favoured by \_\_\_\_\_.

- A. non-polar solvents
- B. bulky groups on the carbon atom attached to the halogen atom

C. small groups on the carbon atom attached to the halogen atom

D. strong nucleophile

**Answer: B**

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75. An optically active halide when allowed to react with  $CN^-$  gives a racemic mixture. The halide is most likely to be \_\_\_\_\_.

A. primary

B. secondary

C. tertiary

D. quaternary

**Answer: C**

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76. Racemisation takes place in  $S_N1$  reaction. The reason is \_\_\_\_\_.

- A. inversion of configuration
- B. retention of configuration
- C. both inversion and retention of the configuration
- D. neither inversion nor retention of the configuration

**Answer: C**



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77. Aromatic compounds have \_\_\_\_\_.

- A. pleasant smell
- B. unpleasant smell
- C. no smell
- D. smell of rotten eggs

**Answer: A**



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**78.** When four or more halogen atoms are attached to an aromatic ring, the compound is classified as \_\_\_\_\_.

- A. monohaloarene
- B. dihaloarene
- C. trihaloarene
- D. polyhaloarene

**Answer: D**



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**79.** Which of the following is an aryl halide ?

A. 

B. 

C. 

D. 

**Answer: C**

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**80.** In aryl halide , halogen atom is attached \_\_\_\_\_.

A. to a carbon atom of benzene ring

B. to a carbon atom of side chain

C. to both benzene ring and side chain

D. none of these

**Answer: A**

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81. Which of the following contain  $sp^2$  hybridised carbon bonded to X?

A. 

B. 

C.  $CH_3 = CH - CH_2 - X$

D. 

Answer: D



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82. The C-Cl bond in chlorobenzene as compared with C-Cl bond in 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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83. The weakest C-Cl bond is present in \_\_\_\_\_.

A. 

B. 

C. 

D. 

**Answer: D**

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84. Arenes when treated with chlorine or bromine in the presence of Lewis acid as a catalyst undergo \_\_\_\_\_ reaction.

- A. Nucleophilic substitution
- B. electrophilic substitution
- C. rearrangement
- D. dehydrohalogenation

**Answer: B**



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85. o-Chlorotoluene and p-Chlorotoluene can be easily separated \_\_\_\_\_.

- A. as there is a large difference in their melting point
- B. as they occur in different states
- C. as they do not form hydrogen bonds

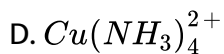
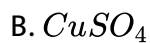
D. by diffusion

**Answer: A**



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**86.** Chlorobenzene is generally obtained from a corresponding diazonium salt by reacting it with \_\_\_\_\_.



**Answer: A**



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87. The product formed when benzenediazonium chloride is treated with CuBr/HBr is\_\_\_\_\_.

- A. bromobenzene
- B. chlorobenzene
- C. 1,3-dibromobenzene
- D. 1,4-dichlorobenzene

**Answer: A**



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88. 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. lesser s-character of bond
- C. longer carbon -halogen bond



D.  $sp^2$ -hybridized carbon attached to halogen

**Answer: D**

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89. A permanent effect in carbon chain compounds in which electrons forming a bond between a carbon atom and another atom are partially displaced towards the atom with greatest electronegativity, is called\_\_\_\_\_.

- A. inert pair effect
- B. resonance
- C. inductive effect
- D. peroxide effect

**Answer: C**

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90. The effect in which atoms or groups in a compounds can push away the electrons is called \_\_\_\_\_ effect.

A.  $-I$

B.  $+I$

C. mesomeric

D. electromeric

**Answer: B**



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91. Resonance occurs due to the :

A. identical arrangement of atoms

B. delocalisation of pi-electrons

C. migration of H-atom

D. migration of protons

**Answer: B**

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92. Chlorobenzene when heated with a mixture of concentrated  $H_2SO_4$  and concentrated  $HNO_3$  yields \_\_\_\_\_ as a major product.

A. 

B. 

C. 

D. 

**Answer: B**

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93. Chlorobenzene on treatment with concentrated sulphuric acids yields  $H_2O$  and \_\_\_\_\_.

A. 

B. 

C. both (A) and (B)

D. none of these

**Answer: C**

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**94.** Introduction of alkyl or aryl group in chlorobenzene by reacting it with methyl chloride in the presence of anhydrous aluminium chloride is known as \_\_\_\_\_.

A. Sandmeyer reaction

B. Wurtz-Fitting reaction

C. Williamson's synthesis

D. Friedel-craft reaction

**Answer: D**

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**95.** Aryl halides undergo \_\_\_\_\_.

- A. Wurtz-Fitting reaction
- B. Friedel craft reaction
- C. Sulphonation reaction
- D. all of the above reactions

**Answer: D**

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**96.** Which one was/is used as a fumigant pesticide ?

- A.  $CH_4$

B.  $CH_3Cl$

C.  $CH_2Cl_2$

D.  $CHCl_3$

**Answer: C**

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97.  $Cl_4$  is also used as a \_\_\_\_\_.

A. fertilizer

B. antiseptic

C. dry-cleaning agent

D. paint remover

**Answer: C**

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98. Which of the following compound has antiseptic property ?

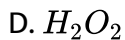
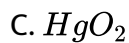
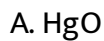


**Answer: B**



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99. Alkanes can be iodinated only in the presence of \_\_\_\_\_.



**Answer: A**

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**100.** Ethyl isocyanide can be prepared when ethyl iodide reacts with \_\_\_\_\_.

- A. silver cyanide
- B. potassium cyanide
- C. cyanogen gas
- D. hydrogen cyanide

**Answer: D**

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**101.** In dehydrohalogenation reaction, the conversion that takes place is \_\_\_\_\_.



A. alkene to haloalkane

B. haloalkane to alkene

C. alcohol to alkene

D. alkene to alcohol

**Answer: B**



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**102.** Ethyl chloride reacts with sodium in dry ether to form butane. The reaction is named as \_\_\_\_\_ reaction.

A. Rosenmund

B. Fittig

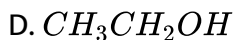
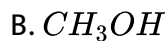
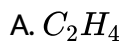
C. Wurtz

D. Clemmensen

**Answer: A**

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103. Both methane and ethane can be prepared in one step from \_\_\_\_\_.



**Answer: B**

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104. An alkyl halide after forming the corresponding Grignard reagent and heating with water yields propane. What is the original alkyl halide ?

A. n-Propyl halide

B. n-Butyl halide

C. Ethyl halide

D. Methyl halide

**Answer: D**

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105.  $(CH_3)_2C(Cl)CH_2CH_3$  and  $(CH_3)_2CHCH(Cl)CH_3$  are \_\_\_\_\_ isomers of each other.

A. chain

B. position

C. geometrical

D. metamers

**Answer: B**

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106. The method of separation of racemic mixture into dextro and laevo isomers is known as \_\_\_\_\_.

A. asymmetric synthesis

B. resolution

C. racemisation

D. polarization

**Answer: B**



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107. Which of the following is used to measure the optical activity?

A. Chemical tests

B. Polarimeter

C. Spectroscope

D. Potentiometer

**Answer: A**

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**108.** During heterolytic fission , which species retain shared pair of electron ?

- A. Less electronegative element
- B. More electronegative element
- C. Electropositive element
- D. Either (A) or (C)

**Answer: B**

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**109.** The species containing carbon with three bonds and an electron, are called \_\_\_\_\_.

- A. free radicals
- B. carbonium ions
- C. carbanions
- D. carboxylate ions

**Answer: A**

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**110.** An example for a nucleophile is

- A.  $OH^-$
- B.  $\overset{\cdot\cdot}{N}H_3$
- C.  $R - C \equiv N$
- D. All of these

**Answer: D**

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111. Inductive effect does NOT operate in \_\_\_\_\_.

A. HF

B.  $F_2$

C.  $CH_3Cl$

D.  $CH_3COOH$

**Answer: B**



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112. When 1-phenyl-2-chloropropane, is heated with alcoholic KOH, the product is \_\_\_\_\_.

A. 1-phenylpropene

B. 2-phenylpropene

C. 1-phenylpropan-2-ol

D. 1-phenylpropan-1-ol

**Answer: A**



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**113.** Acetonitrile is prepared by reacting an alcoholic solution of methyl iodide with

- A. silver cyanide
- B. potassium cyanide
- C. hydrogen cyanide
- D. ammonia

**Answer: B**



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114. An excess of ethyl chloride reacts with  $NH_3$  to give\_\_\_\_\_.

- A.  $3^\circ$  amine
- B.  $2^\circ$  amine
- C.  $1^\circ$  amine
- D. quaternary ammonium salt

**Answer: D**



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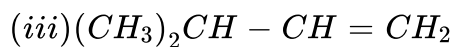
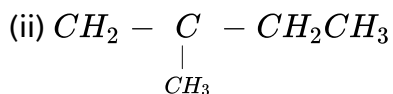
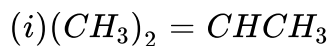
115. Alcoholic KOH can be effectively utilized for \_\_\_\_\_.

- A. dehydrogenation
- B. dehydrohalogenation
- C. dehalogenation
- D. dehydration

Answer: B

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116. When 2-bromo-2-methylbutane is heated with alcoholic KOH, the possible products are \_\_\_\_\_.



A. (i),(iii)

B. (i),(ii)

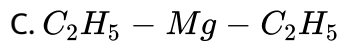
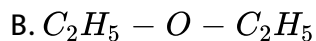
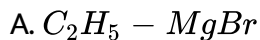
C. (ii),(iii)

D. (i),(ii),(iii)

Answer: B

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117. If ethyl bromide is refluxed with ether and magnesium then which of the following compound is formed ?



D. none of these

**Answer: A**



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118. In a carbonium ion, the central carbon atom is \_\_\_\_\_.

A. positively charged

B. negatively charged

C. neutral

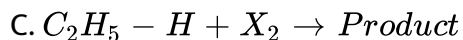
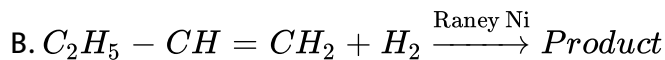
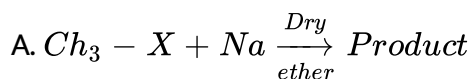
D. any of the above depending upon the other atoms present along with carbon

**Answer: A**

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### Critical Thinking

1. Which of the following reactions will yields the product, than can be preferably used as solvent for the non-polar compounds ?



D. All of these

**Answer: C**



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2. If two halogen atoms are attached to same carbon atom of an alkane, it is called as \_\_\_\_\_.

- A. alkyl halide
- B. alkylene halide
- C. alkylidene halide
- D. aryl halide

Answer: C



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3.  $C_4H_9Br$  can represent

- A. a  $3^\circ$  bromoalkane
- B. a  $2^\circ$  bromoalkane

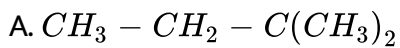
C. a 1° bromoalkane

D. all of these

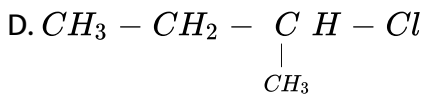
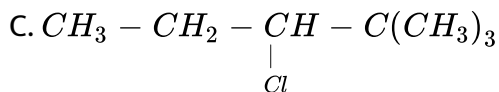
**Answer: D**

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4. Among the following examples, 3° alkyl halide is \_\_\_\_\_.



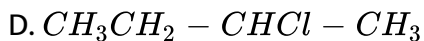
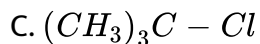
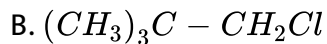
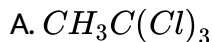
B. 



**Answer: A**

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5. Which of the following is 3° chloride ?

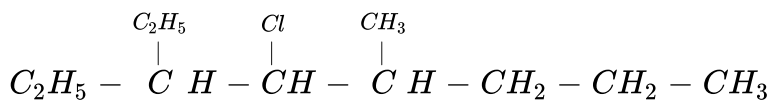


Answer: C



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6. IUPAC name of



A. 4-Chloro-3-ethyl-2-methylheptane

B. 4-Chloro-3-ethyl-5-methyloctane

C. 5-Chloro-6-ethyl-4-methyloctane

D. 4-Chloro-5-methyl-3-ethyloctane

**Answer: B**

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7. IUPAC name of  $(CH_3)_3C - CH_2 - CHI - CH_3$  is

- A. 2-Iodo-4,4-dimethylbutane
- B. 4-Iodo-2,2-dimethylpentane
- C. 2-Iodo-4,4-dimethylpentane
- D. 3-Iodo-4,4-dimethylpentane

**Answer: C**

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8. IUPAC name of the compound



- A. 1-Chloro-2-ethyl-1,4,4-trimethylbutane
- B. 3-Ethyl-5-methyl-2-chlorohexane
- C. 2-Chloro-3-ethyl-5-methylhexane
- D. 2-Chloro-2-methyl-6-ethylheptane

Answer: C



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9. The correct order of C-X bond polarity is:

- A.  $CH_3Br > CH_3Cl > CH_3I$
- B.  $CH_3I > CH_3Br > CH_3Cl$
- C.  $CH_3Cl > CH_3Br > CH_3I$
- D.  $CH_3Cl > CH_3I > CH_3Br$

**Answer: C**

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10. In the compound 'X', all the bond angles are exactly  $109^{\circ}28'$ . 'X' may be\_\_\_\_\_.

- A. Chloroform
- B. Iodoform
- C. Chloromethane
- D. Carbon tetrachloride

**Answer: D**

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11. Direct halogenation of alkane is NOT a suitable method for the preparation of alkyl halides because\_\_\_\_\_.

- A. the reaction cannot be controlled
- B. a mixture of mono, di, tri, and polyhalogen derivative is obtained ,which is difficult to separate
- C. alkyl halides obtained are not pure
- D. all of these

**Answer: D**



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12. Pent-1-ene+HCl toProduct. Major product in this reaction will be\_\_\_\_\_.

- A. 3-Chloropentane
- B. 2-Chloropentane
- C. 1,2-Dichloropentane
- D. 1-Chloropentane

**Answer: B**

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13. Isobutyl bromide may be obtained from isobutylene and HBr in the presence of \_\_\_\_\_.

- A. peroxide
- B. hydroquinone
- C. pyridine
- D. diffused sunlight

**Answer: A**

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14. Which of the following reagents CANNOT be used to prepare an alkyl halide from an alcohol ?

A.  $\text{HCl}$ +anhydrous  $\text{ZnCl}_2$

B.  $\text{PBr}_3$

C.  $\text{NaCl}$

D.  $\text{SOCl}_2$

**Answer: C**

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15. Amongst the following ,  $\text{HBr}$  reacts fastest with \_\_\_\_\_.

A. 2-Methylpropan-2-ol

B. Propan-1-ol

C. Propan-2-ol

D. 2-Methylpropan-1-ol

**Answer: A**

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16. The solvent used in the conversion of alcohol to alkyl halide through  $SOCl_2$  is \_\_\_\_\_.

- A. pyridine
- B. ether
- C. chloroform
- D. benzene

**Answer: A**



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17. Formation of an alkyl halide from an alkyl halide with change in halogen atom is nothing but a/an \_\_\_\_\_.

- A. exchange reaction
- B. replacement reaction

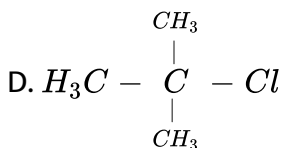
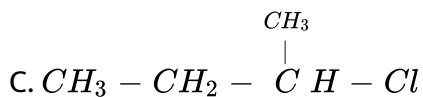
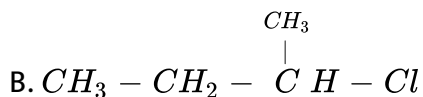
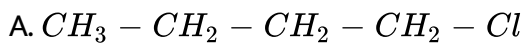
C. nucleophilic substitution

D. all of these

**Answer: D**

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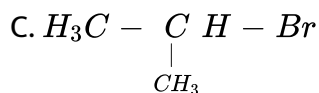
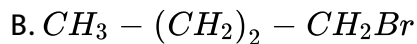
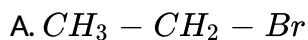
18. Which of the following has highest boiling point ?



**Answer: A**

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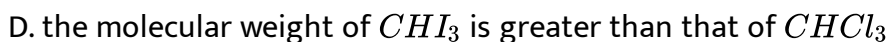
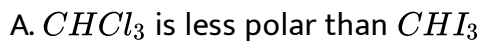
19. Which of the following alkyl halides has the lowest boiling point ?



Answer: D

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20.  $CHCl_3$  is a liquid while  $CHI_3$  is a solid, because\_\_\_\_\_.





**Answer: D**

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21. The conversion of alkyl halides to the corresponding alcohols is carried out in the presence of \_\_\_\_\_.

A. aq. KOH

B. aq. NaOH

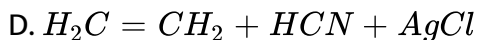
C. moist  $Ag_2O$

D. all of these

**Answer: D**

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22. The products formed when ethyl chloride is treated with silver cyanide, are \_\_\_\_\_.



**Answer: C**

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23.  $C_2H_5Br$  gives  $C_2H_5CN$  on reaction with alcoholic KCN, while with AgCN the major product is  $C_2H_5NC$ . The reason is \_\_\_\_\_.

A. AgCN is electrovalent

B. AgCN is more covalent

C. Ag is more electropositive as compared to K.

D. Ag is noble metal

**Answer: B**

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24. Alkyl halides react with an alcoholic solution of ammonia to give a mixture of

- A. primary and secondary amines
- B. primary and tertiary amines
- C. primary, secondary and tertiary amines
- D. primary, secondary, tertiary amines and the quaternary ammonium salts

**Answer: D**

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25. A carbon compound X forms Y with sodium metal. It also forms Z with  $PCl_5$  but Y and Z react to form diethyl ether. Therefore X, Y and Z are respectively\_\_\_\_\_.

A.  $C_2H_5OH$ ,  $C_2H_5O\text{Na}$ ,  $C_2H_5Cl$

B.  $C_2H_5Cl$ ,  $C_2H_5O\text{Na}$ ,  $C_2H_5OH$

C.  $C_2H_5OH$ ,  $C_2H_6$ ,  $C_2H_4Cl_2$

D.  $C_2H_5OH$ ,  $C_2H_5Cl$ ,  $C_2H_6$

**Answer: A**

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26. When n-butyl chloride is treated with alcoholic potash, the main product formed is \_\_\_\_\_.

A. but-1-ene

B. n-butyl alcohol

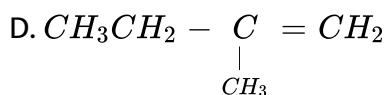
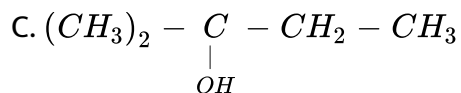
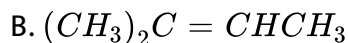
C. but-2-ene

D. sec-butyl alcohol

**Answer: A**

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27. The compound obtained as the major product on refluxing 2-Chloro-2-methylbutane with alcoholic Koh solution is \_\_\_\_\_.



Answer: B

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28. Wurtz synthesis is carried out by treating \_\_\_\_\_.

A. alkyl halide in dry ether with anhydrous sodium hydroxide

- B. alkyl halide in dry ether with sodalime
- C. alkyl halide in dry ether with sodium metal
- D. alkyl halide in aqueous solution of sodium hydroxide

**Answer: C**

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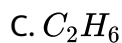
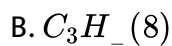
**29.** Reaction with ethyl chloride with sodium leads to the formation of \_\_\_\_\_.

- A. ethane
- B. propane
- C. n-butane
- D. n-pentane

**Answer: C**

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30. A mixture of ethyl iodide and methyl iodide undergoes Wurtz-Fittig reaction. The alkane/s obtained is/are \_\_\_\_\_.



D. all of these

**Answer: D**



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31. The alkane that is NOT formed from isopropyl bromide and ethyl bromide together or separately with sodium in ether is \_\_\_\_\_.

A. n-butane

B. 2,3-dimethylbutane

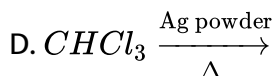
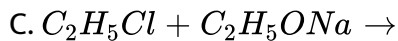
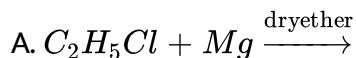
C. n-hexane

D. isopentane

**Answer: C**

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**32. Which of the following reaction gives ethane ?**



**Answer: B**

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33. Grignard reagents are obtained by using dry reactants because \_\_\_\_\_.

- A. Grignard reagent reacts with water to form carbonyl compound
- B. Grignard reagent reacts with water to form alkane
- C. Grignard reagent forms explosive mixture with water
- D. Grignard reagent reacts with  $H_2O$  to form alcohol

**Answer: B**



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34. Which of these do not form Grignard reagent ?

- A.  $CH_3F$
- B.  $CH_3Cl$
- C.  $CH_3Br$
- D.  $CH_3I$

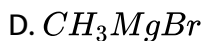
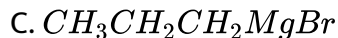
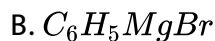
**Answer: A**



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35.  $R - Mg - Br + H_2O \rightarrow RH_{(gas)}$ . Gas occupies  $1.4 \text{ L } g^{-1}$  of RH at S.T.P.

Hence , R-Mg-Br is \_\_\_\_\_ .



**Answer: D**



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36. Which among the following statement is WRONG about iodoethane ?

- A. It reacts with alcoholic potassium cyanide to give ethyl cyanide.
- B. It gives ethanol on treatment with moist  $Ag_2O$
- C. It reacts with Na in ether to give n-butane
- D. with sodium methoxide , it gives diethyl ether.

**Answer: D**

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37. For a given substance the amount of rotation of plane of polarized light depends upon \_\_\_\_\_.

- A. the number of molecules of the compound
- B. the nature of light beam
- C. specific rotation
- D. number of asymmertric 'C' atoms in the molecule of substance

**Answer: A**

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38. A racemic mixture is optically inactive due to :

- A. plane of symmetry
- B. internal compensation
- C. external compensation
- D. non-chiral carbon

**Answer: C**

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39. Enantiomers \_\_\_\_\_.

- A. are two optical isomers of a compound having different molecular formula
- B. have same chemical properties

C. rotate the plane of the plane polarised light by unequal amount and in opposite direction.

D. have same rate of chemical reaction

**Answer: B**



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40. An organic compound will show optical isomerism if \_\_\_\_\_.

A. all groups attached to carbon atoms are same

B. four groups attached to carbon atoms are different

C. three groups attached to carbon atoms are different

D. two groups attached to carbon atoms are same

**Answer: B**



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41. Which of the following compound can exhibit enantiomerism ?

A. 

B. 

C. 

D. 

**Answer: B**

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42. Optical isomerism is exhibited by \_\_\_\_\_.

A. 1,2-dichloropropane

B. 1,1-dichloropropane

C. 2,2-dichloropropane

D. 1,3-dichloropropane

**Answer: A**



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**43.** About a racemic mixture, some statements are given below :

- (i) It is a mixture of (d) and (l) isomers in equimolar proportion.
- (ii) It is a mixture of two optical isomers in equal proportions by weights.
- (iii) It may be laevo-rotatory or dextro-rotatory
- (iv) It rotates the plane of polarisation of light by equal angles on both the sides.

Among the following , the FALSE statements are \_\_\_\_\_.

- A. only (ii),(iii) and (iv)
- B. only (ii) and (iii)
- C. only (iii) and (iv)
- D. only (i) and (iii)

**Answer: C**



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44. Order of priority of groups  $OCOCH_3$ ,  $COCH_3$  and  $COOCH_3$  in R,S configuration is \_\_\_\_\_.



Answer: B

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45. A nucleophile should possess \_\_\_\_\_.

A. an overall negative charge

B. an overall positive charge



C. a lone pair of electrons

D. an unpaired electron

**Answer: C**

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**46.** A nucleophile is:

A. Lewis acid

B. Lewis acid and also a Lewis base

C. Lewis base

D. neither a Lewis acid nor a Lewis base

**Answer: C**

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47. Which is NOT the correct statement/s for the nucleophilic reagents?

- (i) They are electron loving species
- (ii) They attack the positive centres as they are negatively charged.
- (iii) They are Lewis acids.
- (iv) They donate lone pair of electrons

A. (i) and (ii)

B. only (iii)

C. (i) and (iii)

D. All of these

**Answer: C**



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48. Substitution nucleophilic second order [ $S_N2$ ] involves \_\_\_\_\_ steps(s).

A. one

B. two

C. three

D. four

**Answer: A**



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**49.** In alkaline hydrolysis of 1-bromopropane , \_\_\_\_\_.

A. reaction is endothermic

B. rate of reaction is independent of concentration of NaOH

C. rate of reaction is doubled , if concentration of any reactant is doubled.

D. rate of reaction is doubled as concentrations of both the reactants are doubled

**Answer: C**



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50. The optically active product obtained from  $S_N2$  reaction of dextro rotatory compound will be \_\_\_\_\_.

- A. dextro rotatory
- B. laevo rotatory
- C. racemic mixture
- D. partially optically active

**Answer: B**



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51. Alkaline hydrolysis of a tertiary alkyl halide involve\_\_\_\_\_.

- A. only one step
- B. twp step

C. three steps

D. four steps

**Answer: B**

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52. In the alkaline hydrolysis of tert-butyl bromide\_\_\_\_\_.

A. Rate =  $K[(CH_3)_3C - Br][OH^-]$

B. Rate =  $K[(CH_3)_3C - Br] + [OH^-]$

C. Rate =  $K[(CH_3)_3C - Br]$

D. Rate =  $K[OH^-]$

**Answer: C**

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53. In  $S_N1$  reaction which of the following is TRUE?

- A. Non-polar solvents favour  $S_N1$  reaction.
- B. Tertiary alkyl halide undergo  $S_N1$  reaction.
- C. The order of reactivity of alkyl halide is  $1^\circ > 2^\circ > 3^\circ$ .
- D.  $\delta H$  is positive

**Answer: B**

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54. Which of the following statements is FALSE about  $S_N1$  mechanism ?

- A. It is a first order reaction.
- B. It is favoured by higher concentration of the nucleophilic reagent.
- C. It involves the formation of an intermediate.
- D. It results into racemisation.

**Answer: B**



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55. Which of the following is TRUE for hydrolysis of an optically active tertiary halide ?

- A. It is unimolecular as the overall reaction involves one molecules.
- B. The product has 100% inversion of configuration
- C. Reaction involves two steps, because order of reaction is one.
- D. Formation of  $sp^2$  carbon is slowest step.

**Answer: D**



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56. If starting compound is laevo rotatory , after the  $S_N1$  reaction, product is \_\_\_\_\_.

- A. Laevo rotatory
- B. Dextro rotatory
- C. racemic mixture
- D. partially optically active

**Answer: C**

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57. Which among the following structure represents symmetric trichlorobenzene?

- A. 
- B. 
- C. 
- D. 

**Answer: B**



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58. Chlorobenzene is .

- A. less active 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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59. Arrange the following compounds in order of increasing dipole moment:

(I) Toluene

(II) m-Dichlorobenzene

(III) o-Dichlorobenzene

(IV) p-Dichlorobenzene

A.  $I < IV < II < III$

B.  $IV < I < II < III$

C.  $IV < I < III < II$

D.  $IV < II < I < III$

**Answer: B**



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**60.** Which of the following cannot be prepared by direct halogenations of benzene ?

A. Iodobenzene

B. chlorobenzene

C. Bromobenzene

D. Fluorobenzene

**Answer: D**



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61. Benzenediazonium salt when simply mixed with KI, gives off \_\_\_\_\_.

A.  $I_2$

B.  $N_2$

C.  $C_6H_6$

D.  $Cl_2$

**Answer: B**



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62. The phenomenon in which atoms or groups in a compound can attract electrons is called \_\_\_\_\_.

- A. mesomeric effect
- B.  $+I$  effect
- C.  $-I$  effect
- D. inert pair effect

**Answer: C**



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63. Example of species showing  $-I$  effect is \_\_\_\_\_.

- A.  $NO_2$
- B.  $-Cl$
- C.  $-COOH$
- D. all of these

**Answer: D**

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**64.** It is easy to substitute  $-Cl$  in 2,4-dinitrochlorobenzene than in chlorobenzene because \_\_\_\_\_.

- A. Nitro group donates  $e^-$  at ortho/paraposition.
- B. Nitro group withdraws  $e^-$  at metaposition
- C. Nitro group donates  $e^-$  meta position
- D. Nitro group donates  $e^-$  at ortho/para position

**Answer: D**

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**65.** In aryl halides, the reactivity is controlled by stronger \_\_\_\_\_ and O. p orientation is controlled by weaker \_\_\_\_\_.

- A. inductive effect, inductive effect
- B. resonance effect, inductive effect
- C. inductive effect, resonance effect
- D. resonance effect , resonance effect

**Answer: C**

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

- A. o-bromotoluene
- B. p-bromotoluene
- C. o- and p-bromotoluenes
- D. m-bromotoluene

**Answer: C**

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67. The commercial uses of DDT and benzene hexachloride are \_\_\_\_\_.

- A. DDT is a herbicide, benzene hexachloride is a fungicide.
- B. both are used as insecticides
- C. both are used as herbicides
- D. DDT is a fungicide and benzene hexachloride is a herbicide

**Answer: B**



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68. Which of the following statement about DDT is FALSE ?

- A. It is readily metabolized.
- B. It is deposited and stored in fatty tissues.

C. It produces unforeseen ecological effects if it exists in soil , plants and animals for a long time.

D. It is replaced by better and safer insecticides

**Answer: A**

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**69.** Halogenation of alkanes is

A. a reductive process

B. an oxidative process

C. an isothermal process

D. an endothermic process

**Answer: B**

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70.  $RC \equiv N$  can be converted to  $RCH_2NH_2$  by \_\_\_\_\_.

- A. reduction
- B. hydrolysis
- C. oxidation
- D. nitration

**Answer: A**

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71. For the reaction,  $C_2H_5OH + HX \xrightarrow{ZnCl_2} C_2H_5X + H_2O$ , where HX is a halogen acid. The order of reactivity of halogen acids for their reaction is :

- A.  $HCl > HBr > HI$
- B.  $HBr > HI > HCl$
- C.  $HI > HCl > HBr$

D.  $HI > HBr > HCl$

**Answer: D**



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72. The electron deficient reagents, which attack the negatively charged carbanions are called \_\_\_\_\_.

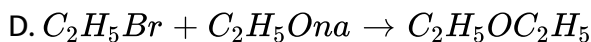
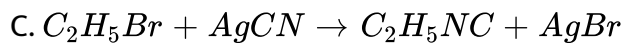
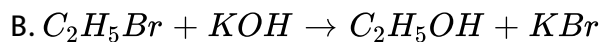
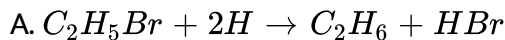
- A. free radicals
- B. electrophiles
- C. nucleophiles
- D. none of these

**Answer: B**



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73. Which of the following reactions does NOT show nucleophilic substitution of  $C_2H_5Br$  ?



**Answer: A**

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74. Heterolytic fission gives rise to \_\_\_\_\_.

A. charged species

B. electrophiles

C. nucleophiles

D. all of these

**Answer: D**



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**75.** Heterolysis of carbon-chlorine bond produces \_\_\_\_\_.

- A. carbocation and chloride ion
- B. two free radicals
- C. carbonion and chloronium ion
- D. two carbocations

**Answer: A**



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**76.** In alkaline hydrolysis of tert-Butyl bromide, \_\_\_\_\_.

- A. rate of reaction is doubled as the concentration of the substrate is doubled
- B. rate of reaction is halved as the concentration of any one of reactant is doubled
- C. rate is doubles, as concentration of nucleophile is doubled
- D. rate is independent of concentration of the reactants

**Answer: A**



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### Competitive Thinking

1. The compound which contains all the four  $1^\circ$ ,  $2^\circ$ ,  $3^\circ$  and  $4^\circ$  carbon atoms is
- A. 2,3-dimethylpentane
- B. 3-chloro-2,3-dimethylpentane

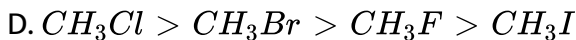
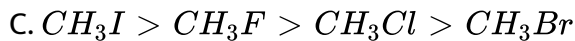
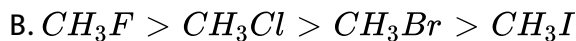
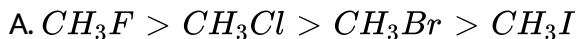
C. 2,3,3-trimethylpentane

D. 3,3-dimethylpentane

**Answer: C**

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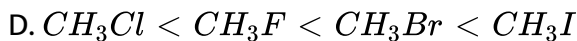
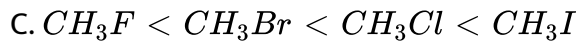
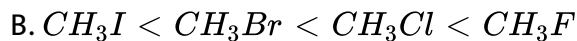
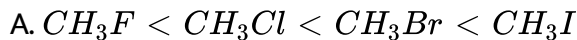
2. Which of the following is the CORRECT order for strength of C-X bond ?



**Answer: A**

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3. Among the halomethanes, the C-X (X= halogen) bond energy increases in the order \_\_\_\_\_.



**Answer: B**



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4. Propene on treatment with HBr gives \_\_\_\_\_.

A. 1,2-dibromoethane

B. propyl bromide

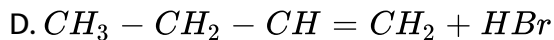
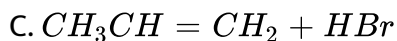
C. isopropyl bromide

D. none of these

Answer: C

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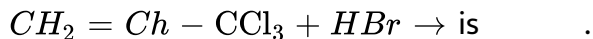
5. This will give 2, 2-dibromopropane:



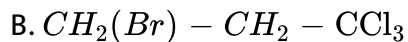
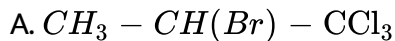
Answer: B

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6. The product of the following reaction:







**Answer: A**

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7. In the reaction with HCl, an alkene reacts in accordance with Markownikoff's rule to give a product 1-chloro-1-methylcyclohexane. The possible alkene is:



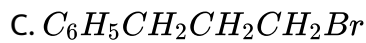
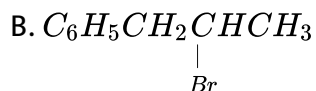
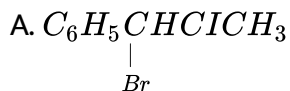
C. both (A) and (B)



Answer: C

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8. The reaction of  $C_6H_5CH = CHCH_3$  with HBr produces :



Answer: A

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9. Which of the following acids adds to propene in the presence of peroxide to give anti-Markownikoff's product

A. HF

B. HCl

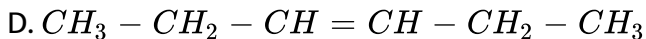
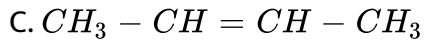
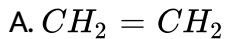
C. HBr

D. HI

**Answer: C**

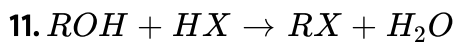
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10. Peroxide effect is shown by \_\_\_\_\_.



**Answer: B**

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In the above reaction , the reactivity of different alcohols is :

A. Tertiary > Secondary > Primary

B. Tertiary > Secondary > Primary

C. Tertiary > Secondary > Primary

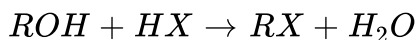
D. Secondary > Primary > Tertiary

**Answer: A**



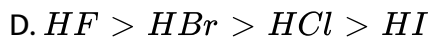
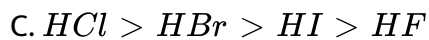
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12. Decreasing order of reactivity of HX in the reaction



A.  $HI > HBr > HCl > HF$

B.  $HBr > HCl > HI > HF$



**Answer: A**

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13. Ethanol is converted into ethyl chloride by reacting with \_\_\_\_\_.



**Answer: B**

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14. When ethyl alcohol ( $C_2H_5OH$ ) reacts with thionyl chloride, in the presence of pyridine, the product obtained is

- A.  $CH_3CH_2Cl + HCl$
- B.  $C_2H_5Cl + HCl + SO_2$
- C.  $CH_3CH_2Cl + H_2O + SO_2$
- D.  $CH_3COCl + HCl + SO_2$

**Answer: B**



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15. The conversion of ethyl bromide to ethyl iodine using sodium iodide and dry acetone is known as \_\_\_\_\_.

- A. Swarts reaction
- B. Finkelstein reaction
- C. Sandmeyer reaction

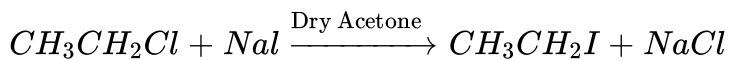
D. Stephen reaction

Answer: B



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16. Name the following reaction:



A. Swarts reaction

B. Finkelstein reaction

C. Wurtz reaction

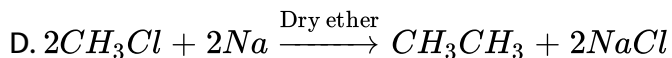
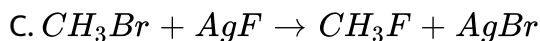
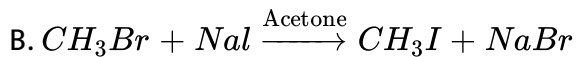
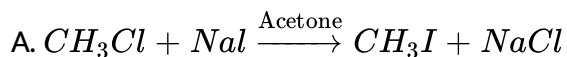
D. Hell-Volhard-Zelinsky reaction

Answer: B



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17. Which one is the Swarts reaction from the following ?

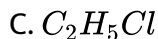


Answer: C



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18. Which of the following is liquid at room temperature





**Answer: A**

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**19.** Among the following, the molecule with the highest dipole moment is

:



**Answer: A**

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**20.** Which of the following haloalkanes is most reactive?

A. 1-Chloropropane

B. 1-Bromopropane

C. 2-Chloropropane

D. 2-Bromopropane

**Answer: D**

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21. An alkyl halide may be converted into an alcohol by :

A. addition

B. substitution

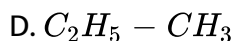
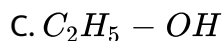
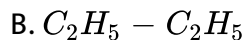
C. dehydrohalogenation

D. elimination

**Answer: B**

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22.  $C_2H_5I$  and  $Ag_2O$  reacts to produce



Answer: C



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23. *[Math Processing Error]*. Y is this reaction is \_\_\_\_\_ .

A. 2-methylpropan-2-amine

B. 2-methylpropene

C. 2-amino-2-methylpropane

D. but-2-ene

**Answer: C**



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**24.** Treatment of ammonia with excess of ethyl chloride will yield

A. diethylamine

B. ethane

C. tetraethyl ammonium chloride

D. methylamine

**Answer: C**



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**25.** Williamson's synthesis is used for the preparation of \_\_\_\_\_.

A. acid

B. ester

C. ether

D. alcohol

**Answer: C**



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**26.** Reaction of *t* – *butyl* bromide with sodium methoxide produces

A. isobutane

B. isobutylene

C. sodium tert-butoxide

D. tert-butyl methyl ether

**Answer: B**



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27. Which halide of formula  $C_4H_9I$  is capable of producing but -2-ene with alcoholic KOH solution ?

- A. 1-Iodobutane
- B. 2-Iodobutane
- C. 1-Iodo-2-methylpropane
- D. 2-Iodo-2-methylpropane

**Answer: B**



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28. In Wurtz reaction, alkyl halide reacts with \_\_\_\_\_.

- A. Na in water
- B. Na in ethereal solution
- C. Na-Hg in water

D. Mg in ethereal solution

**Answer: B**

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29. The compound which is not formed when a mixture of n-butyl bromide and ethyl bromide treated with sodium metal in the presence of dry ether is

A. Butane

B. Octane

C. Hexane

D. Ethane

**Answer: D**

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30. An mixture of two organic chlorine compounds was treated with sodium metal in ether solution. Isobutane was obtained as a product. The two chlorine compounds are:

- A. methyl chloride and propyl chloride
- B. methyl chloride and ethyl chloride
- C. isopropyl chloride and methyl chloride
- D. isopropyl chloride and ethyl chloride

**Answer: C**

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31. The order of reactivities of methyl halide in the formation of Grignard reagent is

- A.  $CH_3I > CH_3Br > CH_3Cl$
- B.  $CH_3Cl > CH_3Br > CH_3I$

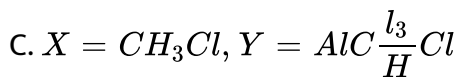




**Answer: A**

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**32. Identify X and Y in the following sequence**



**Answer: A**

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33. What is the chemical composition of Nicol prism ?

- A.  $Al_2O_3$
- B.  $CaSO_4$
- C.  $CaCO_3$
- D.  $Na_3AlF_6$

Answer: C



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34. The number of asymmetric carbon atom/s in lactic acid is /are\_\_\_\_\_.

- A. one
- B. two
- C. three
- D. zero

**Answer: A**

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35. Two possible stereostructures of  $CH_3CHOH.COOH$ , which are optically active, are called:

- A. enantiomers
- B. mesomers
- C. diastereomers
- D. atropisomers

**Answer: A**

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36. Which of the following is an optically active compound ?

A. Butan-1-ol

B. Propan-1-ol

C. 2-Chlorobutane

D. 4-Hydroxyheptane

**Answer: C**

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37. If 'n' represents total number of asymmetric carbon atoms in a compound, then the possible number of optical isomers of the compound is

A.  $2n$

B.  $n^2$

C.  $2^n$

D.  $2n+2$

**Answer: C**

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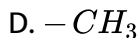
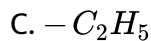
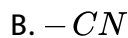
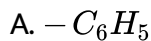
**38.** ( + 2) 2-methylbutan -1-ol(-)2-methylbutan -1-ol have different values for which

- A. Boiling point
- B. Relative density
- C. Refractive index
- D. Specific rotation

**Answer: D**

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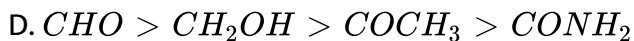
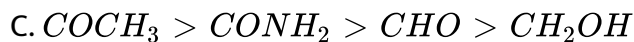
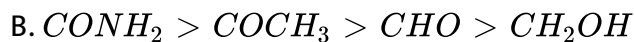
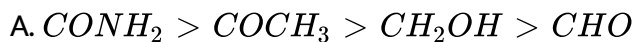
**39.** Which among the following functional groups has been given the highest priority while assigning R-S configuration



**Answer: B**

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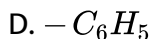
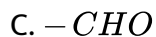
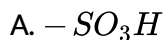
**40.** While assigning R,S configuration the correct order of priority of groups attached to chiral carbon atom is



**Answer: B**

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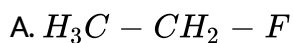
41. In assigning R-S configuration which among the following groups has highest priority?

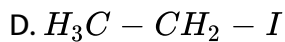
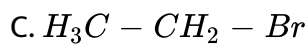
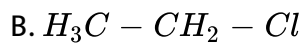


**Answer: A**

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42. Which of the following halide is most reactive towards Nucleophilic substitution reactions ?





**Answer: D**

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43. Alkaline hydrolysis of  $CH_3Br$  with aqueous KOH is which order reaction /

A. 1<sup>st</sup>

B. 2<sup>nd</sup>

C. 3<sup>rd</sup>

D. zero

**Answer: B**

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44. In  $S_N2$  reaction \_\_\_\_\_.

- A. the reaction is unimolecular
- B. the reaction is favoured by weak nucleophile
- C. carbonium ion is formed
- D. polarity of solvent has no rule

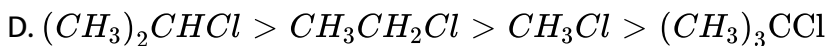
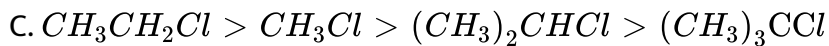
Answer: D

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45. In  $S_N2$  reactions, the correct order of reactivity for the following compounds:

$CH_3Cl$ ,  $CH_3CH_2Cl$ ,  $(CH_3)_2CHCl$  and  $(CH_3)_2CCl$  is:

- A.  $CH_3Cl > (CH_3)_2CHCl > CH_3Cl_2Cl > (CH_3)_3CCl$
- B.  $CH_3Cl > CH_3CH_2Cl > (CH_3)_2CHCl > (CH_3)_3CCl$

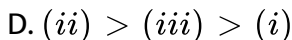
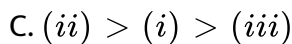
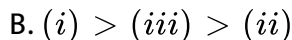
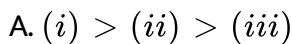
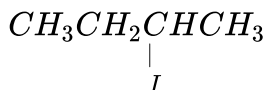
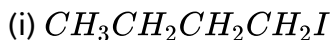


Answer: B



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46. The CORRECT order of reactivity of the following iodides in  $S_N2$  reaction is \_\_\_\_\_.



**Answer: B**

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47. Which of the following statement is INCORRECT for bimolecular nucleophilic substitution reaction  $S_N2$  ?

- A. It is a second order reaction.
- B. In ( $S_N2$ ) the substrate does not undergo heterolytic fission.
- C. The rate of ( $S_N2$ ) reaction does not depend on concentration of both substrate and nucleophilic reagent.
- D. ( $S_N2$ ) reaction occurs in single step without forming intermediate

**Answer: C**

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48. In alkaline hydrolysis of tert-butyl bromide , the order of reaction with respect to nucleophile is \_\_\_\_\_.

- A. zero
- B. first
- C. pseudo
- D. second

**Answer: A**



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49. Tertiary butyl bromide is hydrolysed by aqueous KOH . When the concentration of Koh is increased , the rate of reaction \_\_\_\_\_.

- A. increases
- B. decreases
- C. remain the same

D. gets doubled

**Answer: C**

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50. Alkaline hydrolysis of which among the following compounds leads to the formation of a racemate ?

A. 1-Bromo-1-phenylethane

B. 1-chloro-3-methylbutane

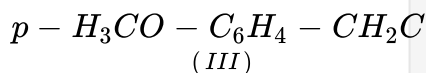
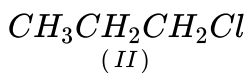
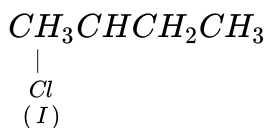
C. Bromomethane

D. 1-Chloropropane

**Answer: A**

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51. The increasing order of the reactivity of the following halides for the  $S_N1$  reaction is



A.  $III > II > I$

B.  $II > I > III$

C.  $I > III > II$

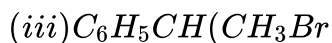
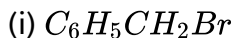
D.  $II > III > I$

Answer: B



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52. The decreasing order of reactivity of the following compounds in  $S_N1$  reactions is \_\_\_\_\_.



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

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

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

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

**Answer: C**



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53. Which of the following undergoes nucleophilic substitution exclusively by  $S_{N1}$  mechanism?

A. Benzyl chloride

B. Ethyl chloride

C. Chlorobenzene

D. Isopropyl chloride

**Answer: A**

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54. Number of  $\pi$  – bonds present in B.H.C. (Benzene hexachloride) are

A. 6

B. 0

C. 3

D. 12

**Answer: B**

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55. In case of R, S configuration the group having highest priority is

A.  $-NO_2$

B.  $-NH_2$

C.  $-CN$



D.  $-OH$

**Answer: D**



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56. Arenes on treatment with chlorine in presence of ferric chloride as a catalyst undergo what type of reaction ?

A. Electrophilic substitution

B. Nucleophilic substitution

C. Electrophilic addition

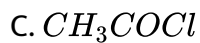
D. Nucleophilic addition

**Answer: A**



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57. The formula of phosgene is \_\_\_\_\_.



**Answer: A**



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58. Chloroform is kept in amber coloured bottles to prevent the formation of \_\_\_\_\_.

A. formaldehyde

B. chloropicrin

C. carbonyl chloride

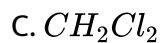
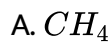
D. formic acid

**Answer: C**



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**59.** Which of the following is used in fire extinguishers ?



**Answer: D**



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**60.** Depletion of ozone layer causes

A. freon

B. alkane

C. Grignard reagent

D. benzene

**Answer: A**

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61. Which of the following is known as freon which is used as a refrigerant ? .

A.  $CCl_2F_2$

B.  $CHCl_3$

C.  $CH_2F_2$

D.  $CF_4$

**Answer: A**

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62. The molecular formula of DDT has \_\_\_\_\_.

- A. 5 chlorine atoms
- B. 4 chlorine atoms
- C. 3 chlorine atoms
- D. 2 chlorine atoms

**Answer: A**



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63. Use of chlorofluorocarbons is NOT encouraged because \_\_\_\_\_.

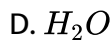
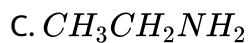
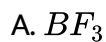
- A. they are harmful to the eyes of people that use it
- B. they damage the refrigerators and air conditioners
- C. they deplete away the ozone in the atmosphere
- D. they destroy the oxygen layer

Answer: C



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64. Which of the following is NOT a nucleophile ?



Answer: A



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65. During homolytic fission \_\_\_\_\_ are formed .

A. carbocations

B. ions

C. carbonions

D. free radicals

**Answer: D**



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**66.** Which of the following is not an electrophile ?

A.  $NH_3$

B.  $AlCl_3$

C.  $SO_3$

D.  $BF_3$

**Answer: A**



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67. Which of the following is an electrophile ?



**Answer: B**



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68. Carbanion contains \_\_\_\_\_ electrons in valence shell

A. six

B. ten

C. eight

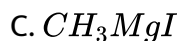
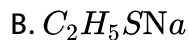
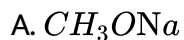
D. five



**Answer: C**

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**69.** Identify organometallic compound(s).

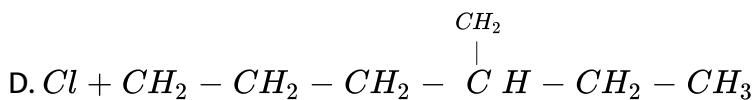
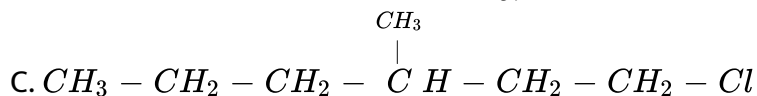
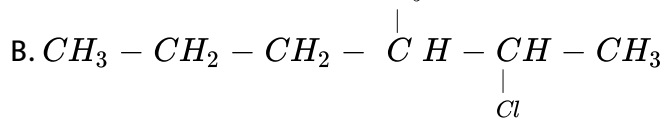
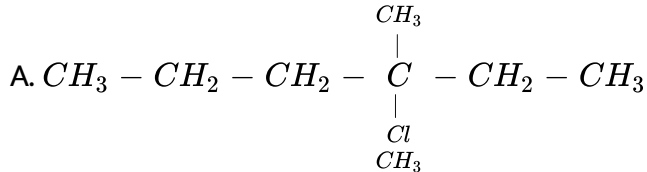


D. All of these

**Answer: C**

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**70.** 'X' is an optically active alkane having lowest molecular mass, Predict the structure of the major product obtained on monochlorination of 'X'.



**Answer: A**



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**71.** The synthesis of alkyl fluoride is best accomplished by:

A. Free radical fluorination

B. Sandmeyer's reaction

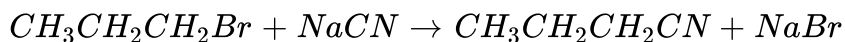
C. Finkelstein reaction

D. Swarts reaction

**Answer: D**

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**72.** Consider the reaction :



This reaction will be the fastest in :

- A. water
- B. ethanol
- C. methanol
- D. N,N-dimethylformamide (DMF)

**Answer: D**

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**73.** Chlorination of ethane is carried out in the presence of

A. anhydrous  $AlBr_3$

B. mercuric chloride

C. ultraviolet light

D. zinc chloride

**Answer: C**

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**74.** Which of the following is allylic halide ?

A. Benzyl chloride

B. (1-Bromoethyl )benzene

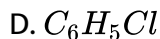
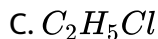
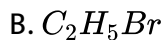
C. 1-Bromobenzene

D. 3-Chlorocyclohex-1-ene

**Answer: D**

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75. Which of the following alkyl halides is used as a methylating agent ?



**Answer: A**



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76. 50% of the reagent is used for dehydrohalogenation of 6.45 g  $CH_3CH_2Cl$ . What will be the weight of the main product obtained ?

[Atomic mass of H , C and Cl are 1 ,12 and 35.5 g/mol respectively]

A. 0.7 g

B. 1.4 g

C. 2.8 g

D. 5.6 g

**Answer: B**



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**77.** Assertion : Reaction of but-1-ene with HBr gives 1-bromobutane as major product.

Reason : Addition of hydrogen halides to alkenes proceeds according to Markownikoff's rule .

The CORRECT answer is \_\_\_\_\_

A. Assertion and Reason are correct. Reason is the correct explanation of Assertion.

B. Assertion and Reason are correct but Reason is not the correct explanation of Assertion.

C. Assertion is correct but Reason is not correct.

D. Assertion is not correct but Reason is correct.

**Answer: D**

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**78.** 12.3 g 1-bromopropane is treated with alcoholic KOH. What mass of propene is obtained if yield is 50% ?

A. 6.05 g

B. 12.3 g

C. 4.2 g

D. 2.1 g

**Answer: D**

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79. 3-menthyl-pent-2-ene on reaction with HBr in presence of peroxide forms an addition product. The number of possible stereoisomers for the product is

- A. six
- B. zero
- C. two
- D. four

**Answer: D**



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80. An example of a sigma bonded organometallic compound is:

- A. Grignard's reagent
- B. Ferrocene
- C. Cobaltcene

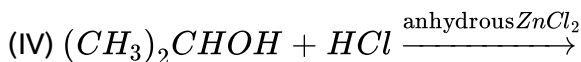
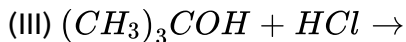
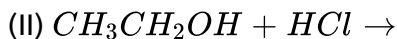
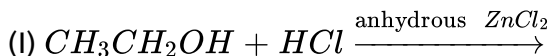


## D. Ruthenocene

Answer: A

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



A. (IV) only

B. (III) and (IV) only

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

D. (I) and (II) only

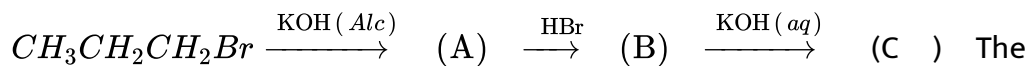
Answer: C



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## Evaluation Test

1. In the following sequence of reactions,



product (C) is

A. propene

B. propyne

C. propan-1-ol

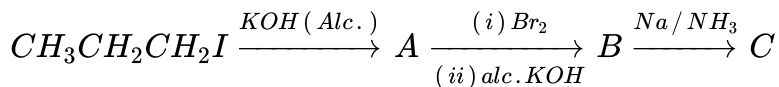
D. propan-2-ol

**Answer: D**



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2. In the following sequence of the reactions :



The end product C is :

- A. alkene
- B. alkanol
- C. alkyne
- D. alkylamine

Answer: C

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3. In the reaction



the product formed is .

- A. 4-methylpent-2-yne

B. propyne

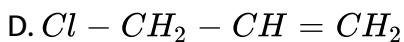
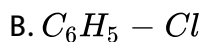
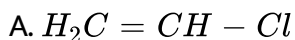
C. propyne and propene

D. 3-methylpent-2-yne

**Answer: A**

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



**Answer: D**

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5. Isopropyl chloride undergoes hydrolysis by :

- A.  $S_N1$  mechanism
- B.  $S_N2$  mechanism
- C.  $S_N1$  and  $S_N2$  mechanism
- D. neither  $S_N1$  nor  $S_N2$  mechanism

**Answer: C**

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6. Which compound shows  $S_N1$  mechanism as well as optical isomerism ?

- A. Benzyl chloride
- B. Allyl chloride
- C. 1-Bromo-1-phenylethane
- D. 2-Chlorobutane

**Answer: C**

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7. 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. longer carbon halogen bond
- D. the inductive effect

**Answer: B**

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8. Which chloroderivative of benzene among the following would undergo hydrolysis most readily with aqueous sodium hydroxide to

furnish the corresponding hydroxyderivative ?

A. 

B. 

C. 

D. 

**Answer: A**



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9. *o* - Toluic acid on reaction with  $Br_2 + Fe$  gives

A. 

B. 

C. 

D. 

**Answer: C**

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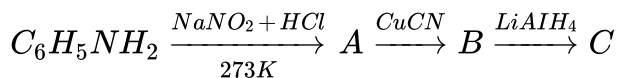
10. The reaction of 4-bromobenzyl chloride with NaCN in ethanol leads to :

- A. 4-Bromobenzyl cyanide
- B. 4-Cyanobenzyl chloride
- C. 4-Cyanobenzyl cyanide
- D. 4-Bromo-2-cyanobenzyl chloride

Answer: A

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11. Identify 'C' in the following sequence :



A. 



B. 

C. 

D. 

**Answer: A**

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12. The compound  $CH_3 - \overset{CH_3}{\underset{Cl}{|C}} - CH_3$

will undergo \_\_\_\_\_.

A.  $S_N1$  mechanism

B.  $S_N2$  mechanism

C.  $S_N1$  and  $S_N2$  mechanism

D. none of these

**Answer: A**





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13. Benzene reacts with  $CHCl_3$  in the presence of anhydrous  $AlCl_3$  to form

- A. chlorobenzene
- B. toluene
- C. mixture of ortho and para chlorotoluene
- D. triphenylmethane

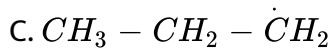
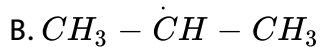
Answer: D



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14. The intermediate during the addition of HI to propene in presence of peroxide is \_\_\_\_\_.



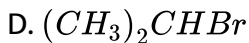
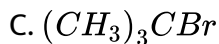
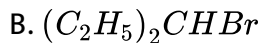


**Answer: B**



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15. The organo bromo compound which shows complete stereochemical inversion during a  $S_N2$  reaction is \_\_\_\_\_.



**Answer: A**



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16. An alkyl chloride produces a single alkene when it reacts with sodium ethoxide and ethanol . This alkene on hydrogenation produces 2-Methylbutane. What is the identity of the alkyl halide ?

- A. 1-Chloro-2,2-dimethylpropane
- B. 1-Chlorobutane
- C. 1-Chloro-2-methylbutane
- D. 2-Chloro-2-methylbutane

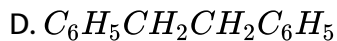
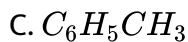
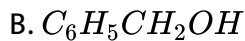
**Answer: C**

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17. In the following reaction ,  $C_6H_5CH_2Br \xrightarrow[2. H_3O^+]{1. Mg, Ether} X$ ,

the product 'X' is

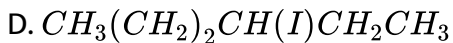
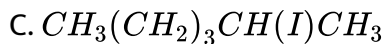
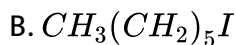
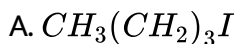
- A.  $C_6H_5CH_2OCH_2C_6H_5$



**Answer: C**

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18. An alkyl iodide (X) reacts with sodium in ether to form 4,5-diethyloctane, the compound (X) is \_\_\_\_\_.



**Answer: D**

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19. Which of the following is NOT a haloalkane ?

A. Freon

B. Teflon

C. Iodoform

D. Vinyl chloride

**Answer: D**



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