



CHEMISTRY

BOOKS - S DINESH & CO CHEMISTRY (HINGLISH)

ORGANIC COMPOUNDS WITH FUNCTIONAL GROUP CONTAINING HALOGENS

Multiple Choice Questions

1. Which of the following is a primary halide ?

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

Answer: D

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2. Pick up the correct statement about alkyl halides

- A. They are associated with each other by H-bonds
- B. They dissolve in water quickly
- C. They dissolve easily in organic solvents
- D. They do not contain any polar bond in their molecules.

Answer: C

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3. The IUPAC name of allyl chloride is

- A. 1-Chloroethane
- B. 3-Chloro-1-propyne
- C. 3-Chloro-1-propene
- D. 1-Chloropropene

Answer: C

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4. Only two isomeric monochloro derivatives are possible from :

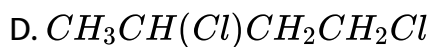
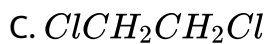
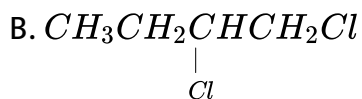
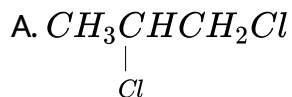
- A. n-Pentane
- B. 2,4-Dimethylpentane
- C. Benzene
- D. 2-Methylpropane

Answer: D



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5. One among the following compounds is not a vic dihalide



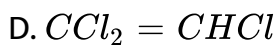
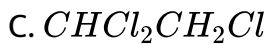
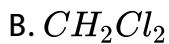
Answer: D



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6. Westrosol has the following formula

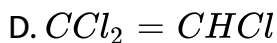
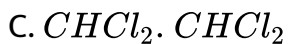




Answer: D

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7. Which of the following is called Westron ?



Answer: C

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8. Which of the following is an example of aralkyl halide ?

A. p-Chlorotoluene

B. Chlorobenzene

C. Allyl chloride

D. Benzyl chloride

Answer: D



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9. In which of the following alkyl halides, all the hydrogen atoms are equivalent ?

A. Isobutyl chloride

B. neo-Pentyl chloride

C. n-Butyl chloride

D. tert-Butyl chloride

Answer: D



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10. IUPAC name of crotyl chloride is

A. 1-Chlorobut-2-ene

B. 2-Chlorobut-2-ene

C. 3-Chlorobut-1-ene

D. 4-Chlorobut-1-ene

Answer: A



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11. Which of the following is a gem dihalide ?

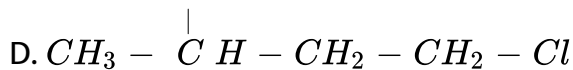
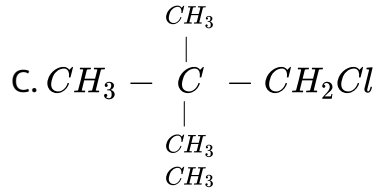
- A. Ethylene dichloride
- B. 2, 2-Dichloropropane
- C. 1, 3-Dichloropropane
- D. 1,2-Dichloropropane

Answer: B

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12. Which of the following alkyl halides is neopentyl chloride ?

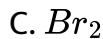
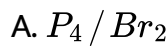
- A. $CH_3 - \overset{CH_3}{\underset{\begin{array}{c} | \\ CH_3 \\ | \\ CH_3 \end{array}}{C}} - CH_2CH_2CH_2Cl$
- B. $CH_3 - \overset{\begin{array}{c} | \\ CH_3 \\ | \\ CH_3 \end{array}}{C} - CH_2 - CH_3$



Answer: C

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13. For the preparation of n-propyl bromide from n-propyl alcohol which of the following reagent is most preferred ?



Answer: A

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14. Chlorination of methane proceeds by

- A. Electrophilic substitution
- B. Nucleophilic substitution
- C. Free radical mechanism
- D. None of these

Answer: C

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15. When silver propanoate is treated with iodine in CCl_4 , the main product formed is

- A. Iodoethane

B. Propyl propanoate

C. Ethyl propanoate

D. 1-Iodopropane

Answer: C

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16. In order to prepare 1-chloropropane which of the following reactants can be employed ?

A. Propene and HCl in the presence of peroxide

B. Propene and Cl_2 followed by treatment with aq. KOH

C. Propanol-1 and $SOCl_2$ /pyridine

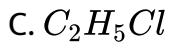
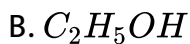
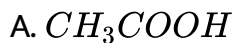
D. Any one of the above can be used

Answer: C



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17. Grove's process is used for the preparation of



D. All of these

Answer: C



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18. Thionyl chloride is preferred in the preparation of chlorine compounds from alcohols because

A. The reaction goes to completion

- B. The byproducts being gases, escape, hence there is no problem of separation of the product
- C. The reagent is cheap
- D. None of the above

Answer: B

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19. Which hydrocarbon is consistent with the following formation ?
Molecular mass = 72 gives a single monochloride and two dichlorides on photochlorination.

- A. Pentane
- B. 2 – Methylbutane
- C. 2, 2 – Dimethylpropane

D. All of the above

Answer: C

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20. Name a reagent used for the bromination at the allylic carbon atom.

A. HBr / H_2O_2

B. HOBr

C. Br_2 / CS_2

D. NBS

Answer: D

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21. Isopropyl isocyanide can be obtained by the reaction between

- A. $CH_3CH_2CH_2I$ and AgCN
- B. $CH_3CH(Br)CH_3$ and KCN
- C. $(CH_3)_2CHI$ and AgCN
- D. $(CH_3)_2CHCl$ and HCN

Answer: C



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22. Which of the reagent is used in the Grove's process for the preparation of alkyl halide from secondary alcohols ?

- A. PCl_5
- B. $SOCl_2$ /pyridine
- C. HCl/anhy. $ZnCl_2$

D. PCl_3

Answer: C

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23. Photochemical chlorination is initiated by a process of

A. Pyrolysis

B. Peroxidation

C. Homolysis

D. Rearrangement

Answer: C

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24. The isomer of bromobutane with lowest boiling point is

- A. n-Butyl bromide
- B. Isobutyl bromide
- C. tert-Butyl bromide
- D. sec-Butyl bromide

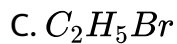
Answer: C



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25. Among the halogen derivatives of ethane, the one which has the highest boiling point is

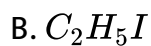
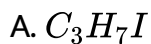
- A. C_2H_5F
- B. C_2H_5Cl



Answer: D

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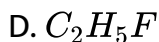
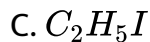
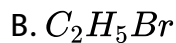
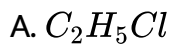
26. Which alkyl halide has maximum density ?



Answer: C

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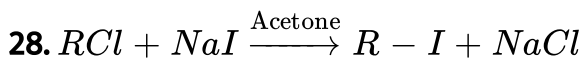
27. Which of the following alkyl halides has the maximum density ?



Answer: C



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This reaction is known as

A. Wurtz Reaction

B. Fitting Reaction

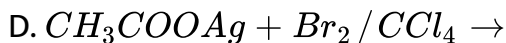
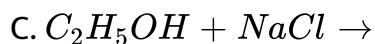
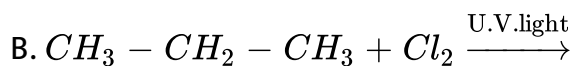
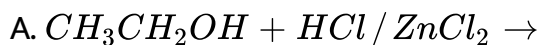
C. Frankland Reaction

D. Finkelstein Reaction

Answer: D

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29. Alkyl halides can be obtained by all methods except



Answer: C

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30. For the preparation of chloroethane,

- A. HCl gas is passed through ethanol in the presence of anhydrous $ZnCl_2$
- B. ethanol is treated with sodium chloride in the presence of dimethylamine
- C. ethyl sulphide is treated with hydrogen chloride
- D. Any of the above methods can be employed

Answer: A

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31. Neopentyl chloride on reaction with ethanolic KOH is likely to give

- A. Neopentyl alcohol
- B. Pentylene
- C. 2-Methyl-2-butene
- D. undergo no reaction

Answer: C



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32. When optically active halide is attacked by CN^- , the product obtained is a racemic mixture. Hence, the halide should be

- A. primary
- B. sec-halide
- C. tert-halide
- D. none of these

Answer: C

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

A. Methoxyethane

B. Ethoxyethanol

C. Methyl ethyl ketone

D. Diethylether

Answer: D

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34. In order to get ethanethiol from bromoethane, the reagent used is :

- A. sodium bisulphide
- B. sodium sulphide
- C. potassium thiocyanate
- D. potassium sulphide

Answer: A

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35. X on treatment with sodium hydroxide followed by the addition of silver nitrate give white precipitate at room temperature which are soluble in NH_4OH . X can be :

- A. Chlorobenzene

B. Ethyl bromide

C. Benzyl chloride

D. Vinyl chloride

Answer: C

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36. Which of the following compounds is not formed when a mixture of methyl bromine and ethyl bromine is treated with sodium metal in the presence of dry ether ?

A. Methane

B. Ethane

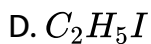
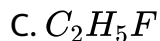
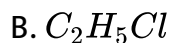
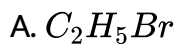
C. Propane

D. Butane

Answer: A

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



Answer: D

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38. Which of the following reactants will yield ethane ?

A. Methyl bromine and sodium

B. Ethyl bromide and Mg

C. Ethanol and H_2SO_4

D. Ethyl bromide and KCN

Answer: A



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39. An alcoholic solution of potassium cyanide was allowed to react with monoiodo derivative of ethane. The product formed will be

A. Nitroethane

B. Ethane nitrile

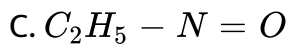
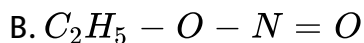
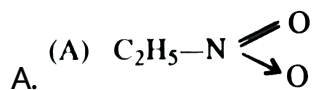
C. Propane nitrile

D. Propane isonitrile

Answer: C

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40. $C_2H_5I \xrightarrow{AgNO_2}$ X. Here X is :
(major product)

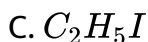
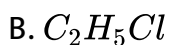
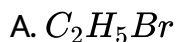


D. All the above

Answer: A

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41. Out of monochloro, monobromo and monoiodo derivatives of ethane, the least reactive compound towards nucleophilic substitutions will be :

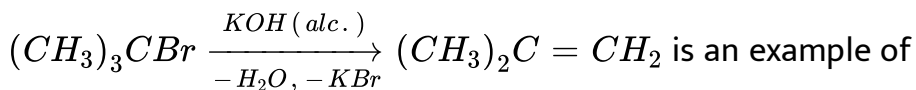


D. All are equally reactive.

Answer: B

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42. The chemical reaction :



A. Nucleophilic substitution

B. Electrophilic substitution

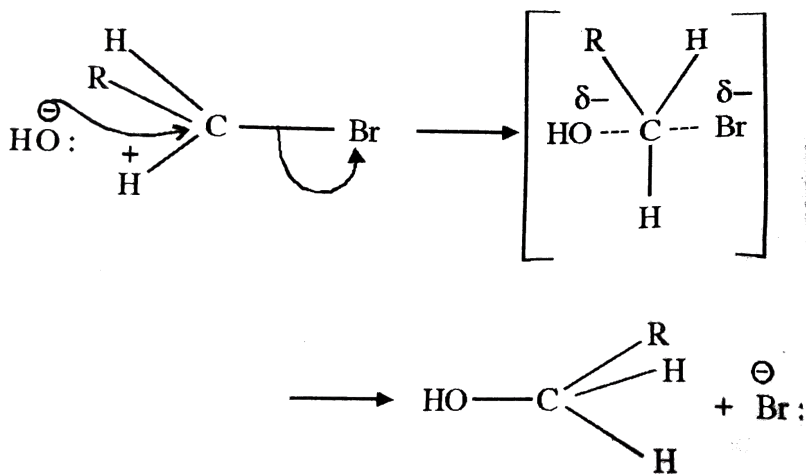
C. Free radical substitution

D. β -Elimination

Answer: D

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43. The hydrolysis of RCH_2Br proceeds as follows :



The reactivity of halides towards this type of process should be

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

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

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

D. $1^\circ \approx 2^\circ \approx 3^\circ$

Answer: B



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44. Which isomer of C_4H_9Br will produce 2-Methyl propane-2-ol by treatment with aqueous KOH ?

A. n-Butyl bromide

B. Isobutyl bromide

C. tertiary bromide

D. secondary-Butyl bromide

Answer: C

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45. In order to prepare ethyl carbylamine from ethyl iodide, the reagent required is

- A. ethanolic solution of AgCN
- B. ethanolic solution of NH_3
- C. ethanolic solution of KCN
- D. ethanolic solution of RNH_2

Answer: A

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46. The process of converting one enantiomers of an optically active compound into racemic mixture is called :

- A. Resolution
- B. Inversion
- C. Epimerisation
- D. Racemisation

Answer: D

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47. Major product obtained when 2-chloro-3-methyl butane is treated with ethanolic KOH is likely to give

- A. Neopentyl lcohol
- B. Pentene

C. 2-Methyl-2-butene

D. No reaction

Answer: C



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48. The reaction , $CH_3Br + OH^- \rightarrow CH_3OH + Br^-$ obeys the mechanism

A. S_N2

B. S_N1

C. E_1

D. E_2

Answer: A



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49. For the preparation of ethyl propionate from ethyl bromide, the order reactnat can be

- A. silver acetate
- B. propionic anhydride
- C. propanoyl chloride
- D. silver propionate

Answer: D

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50. Which of the following alkyl halides undergoes the fastest S_{N1} reaction ?

- A. Methyl chloride

B. Ethyl chloride

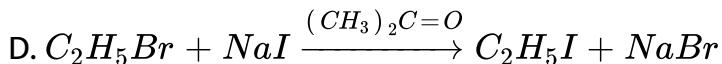
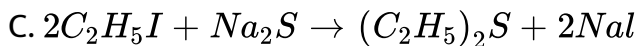
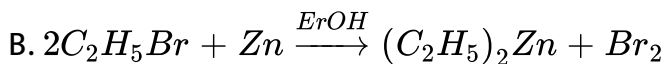
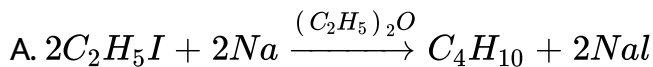
C. Isobutyl chloride

D. tert-Butyl chloride

Answer: D

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51. Choose the incorrect reaction



Answer: B

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52. When isopropyl iodide in ethereal solution is warmed with sodium, the product formed is :

- A. n-Hexane
- B. Neohexane
- C. 2,3-Dimethylbutane
- D. Mixture of the above

Answer: C

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53. When bromoethane is treated with potassium sulphide, the main product formed is

- A. Ethanethiol

B. Ethanol

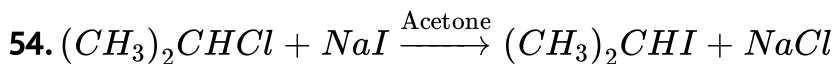
C. Mustard gas

D. Thioethylethane

Answer: D



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The above reaction is known as :

A. Perkin's reaction

B. Finkelstein's reaction

C. Fitting reaction

D. Sabatier and Senderen's reaction

Answer: B



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55. 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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56. 1 – phenyl–2 – chloropropane on treating with alc. KOH gives mainly :

- A. 3 – Phenylpropene
- B. 1 – Phenylpropene
- C. 1 – Phenylpropanol
- D. 2 – Phenyl– 2 – propanol

Answer: B

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57. Which of the following metal can be used for carrying out Wurtz-Fitting reaction ?

- A. Sodium
- B. Mercury
- C. Radium
- D. Any of these

Answer: A

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58. Alkyl halide can be converted into alkene by

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

Answer: C

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59. 2-Chloro-2-methylpropane on reaction with aqueous KOH gives X as the major product. X is

A. 2-Butene

B. 2-Methylpropene

C. 1-Butene

D. 2-Methyl-2-propanol

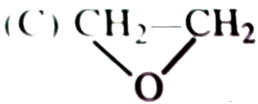
Answer: B

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60. When ethyl iodide is heated with dry silver oxide, the product formed is :

A. C_2H_5OH

B. $C_2H_5OC_2H_5$

C. 

D. CH_3CHO

Answer: A

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61. Ethyl bromide reacts with lead -sodium alloy to form

- A. Tetraethyl lead
- B. Ethyl sodium
- C. Ethane
- D. Ethene

Answer: A

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62. The reaction involving the treatment of benzene diazonium chloride with copper powder and HCl is treated as

- A. Sandmeyer's reaction
- B. Gattermann's reaction
- C. Ulmann's reaction
- D. Kolbe's reaction

Answer: B

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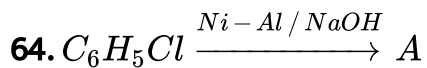
63. Chlorobenzene is prepared commercially by

- A. Dow's Process
- B. Deacon's Process
- C. Rasching Process
- D. Etard's Process

Answer: C



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In this reaction A is :

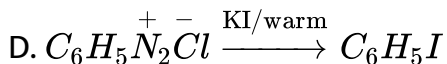
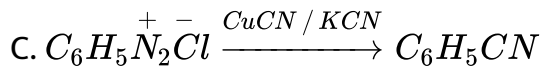
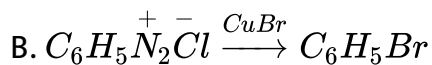
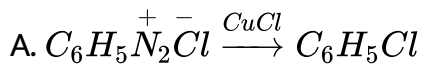
- A. Phenol
- B. Sodium phenoxide
- C. Benzol
- D. Benzene

Answer: D



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65. Which of the following is not an example of Sandmeyer's reaction ?



Answer: D

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66. In order to prepare fluorobenzene from benzene diazonium chloride which of the following reagent is used

A. Fluorine

B. HF

C. Hydrofluorosilicic acid

D. Fluoboric acid

Answer: D

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67. The yield of chlorobenzene obtained by reaction of phenols with PCl_5 is less due to formation of

- A. o-Chlorophenol
- B. p-Chlorophenol
- C. Phosphorus oxychloride
- D. Triphenylphosphate

Answer: D

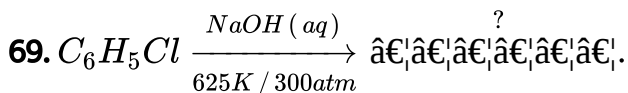
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68. In the chlorination of benzene in the presence of ferricchloride, function of $FeCl_3$ is :

- A. to provide halogen
- B. to form electrophile Cl^+
- C. resonanace stabilisation
- D. as catalyst

Answer: B

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The product can be

- A. Benzal
- B. Sodium benzoate

C. Benzol

D. Sodium phenate

Answer: D



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70. Which of the following represents aryl alkyl halide ?

A. o-Chlorotoluene

B. 1-Chloro-2-phenylethane

C. o-Bromochlorobenzene

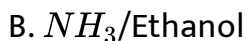
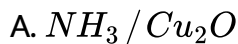
D. None of the above

Answer: B



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71. In order to prepare benzenamine from chlorobenzene which of the following reactants are required



D. any of the above can be used.

Answer: A

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72. Choose the correct statement about C-Cl bond of vinyl chloride

A. It is shorter and stronger than C-Cl bond of alkyl chlorides

B. The carbon atom carrying halogen atom is sp^3 -hybridised

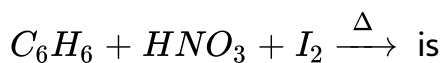
C. Percentage of s-character is 25%

D. All the above

Answer: A

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73. The major product in the given reaction



A. Nitrobenzene

B. Iodobenzene

C. Benzoic acid

D. p-Iodonitrobenzene

Answer: B

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74. Out of two compounds A (1, 2-Dibromo benzene) and B (1, 4-Dibromobenzene) the compound, having higher dipole moment is

- A. A
- B. B
- C. both have same dipole moments
- D. unparedictable

Answer: A

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75. For the reaction $C_6H_6 + (CH_3)_2CHCH_2Cl \xrightarrow{\text{Anhy. } AlCl_3}$

The final product is

- A. $CH_3CH_2CH(CH_3)_2$
- B. Cumene

C. n-Butyl benzene

D. tert-Butyl benzene

Answer: D

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76. Chlorobenzene on reaction with CH_3Cl in the presence of anhy.

$AlCl_3$ will give

A. Toluene

B. m-Chlorotoluene

C. p-Chlorotoluene

D. A mixture of o-and p-chlorotoluene

Answer: D

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77. C-Cl bond has partial double bond character in

- A. Vinyl chloride
- B. Chlorobenzene
- C. Both
- D. None

Answer: C

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78. Iodobenzene can be converted into diphenyl by

- A. Wurtz reaction
- B. Wurtz Firrig reaction
- C. Ullman reaction

D. Frankland reaction

Answer: C

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79. Chlorobenzene can be prepared by reacting aniline with

A. Hydrochloric acid

B. Cuprous chloride

C. Chlorine in presence of anhydrous aluminium chloride

D. Ice cold nitrous acid followed by treatment with cuprous chloride and HCl.

Answer: D

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80. In the reaction, $CH_3C \equiv \overset{-}{C}\overset{+}{N}a + (CH_3)_2CHCl \rightarrow$

The product formed is

- A. 4 – Methyl–2 – pentyne only
- B. Propyne
- C. Propyne and propylene
- D. Mixture of propene, propyne and 4 – methyl–2 – pentyne

Answer: D

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81. Which of the following will give white ppt. of $AgCl$ in cold with alcoholic $AgNO_3$

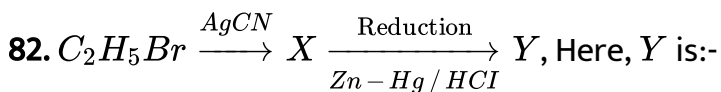
- A. $CH_3CH = CHCl$
- B. $CH_2 = CHCH_2Cl$



D. None of these

Answer: B

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A. n-Propylamine

B. Ethylamine

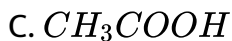
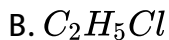
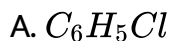
C. Isopropylamine

D. Ethylmethanamine

Answer: D

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83. Which of the following compounds will undergo chemical reactions with ethanolic solution of KCN ?



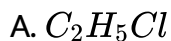
D. All

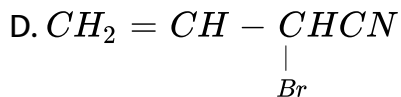
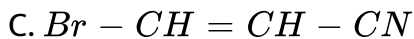
Answer: B



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84. Identify C in the following series $C_3H_7I \xrightarrow[Alc]{KOH} A \xrightarrow[\Delta]{NBS} B \xrightarrow[Alc]{KCN} C$

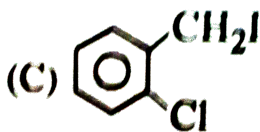
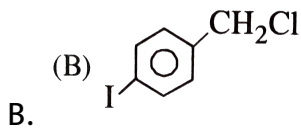
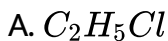




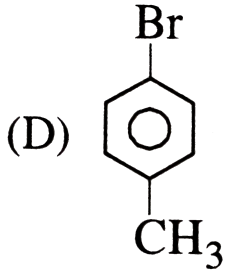
Answer: B

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85. Which of the following compound will give yellow ppt. on shaking aqueous solution of NaOH followed by acidification and addition of $AgNO_3$ solution ?

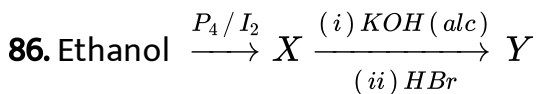


C.



Answer: C

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In this sequence of reactions Y is :

A. Ethene

B. Bromoethane

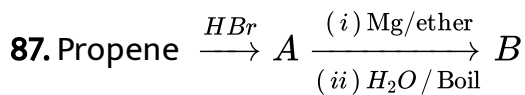
C. Ethanol

D. None

Answer: B



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In the above sequence of reactions B is

- A. Propane
- B. Butane
- C. Propene
- D. Ethane

Answer: A



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88. A halide with formula $C_6H_{13}Br$ gave two isomeric alkenes A and B with formula C_6H_{12} . On reductive ozonolysis of mixture of A and

B following compounds were obtained

CH_3COCH_3 , CH_3CHO , CH_3CH_2CHO and $(CH_3)_2CHCHO$.

The halide is

- A. 2-Bromohexane
- B. 3-Bromo-2-methylpentane
- C. 2,2-Dimethyl-1-bromohexane
- D. unpredictable

Answer: B

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89. Alkyl halides + $Mg \rightarrow (G) \xrightarrow[\text{Boil}]{H_2O}$ propane

The alkyl halide is :

- A. Ethyl bromide
- B. n-Propyl iodide

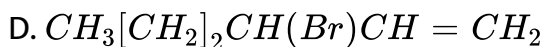
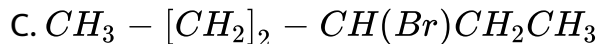
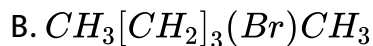
C. Isopropyl iodide

D. Both B and C are correct

Answer: D

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90. An alkyl bromide (A) forms Grignard's reagent which on treatment with water yields n-hexane. (A) with sodium in presence of dry ether forms 4,5-diethyloctane. (A) is :



Answer: C

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91. Which of the following is the correct nucleophilic substitution ?

A. Vinyl chloride > Allyl chloride > Propyl chloride

B. Allyl chloride > Propyl chloride > Vinyl chloride

C. Allyl chloride > Vinyl chloride > Propyl chloride

D. Propyl chloride > Vinyl chloride > Allyl chloride

Answer: B

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92. Dehydrohalogenation is possible in

A. $(C_6H_5)_3C - Cl$

B. $(CH_3)_3C \cdot Cl$

C. CH_3Br

D. Both A and B

Answer: B

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93. A chloro derivative (A) on treatment with zinc – copper couple gives a hydrocarbon with five C atoms. When 'A' is dissolved in ether and treated with sodium, 2, 2, 5, 5 – tetramethyl hexane is obtained. What is the original compound A ?

A. 2-Chloro-2-methylpropane

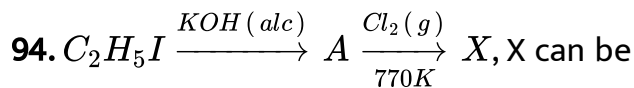
B. 1-Chloro-2, 2-dimethylpropane

C. 2-Chloro-2-methylbutane

D. Isopropyl chloride

Answer: B

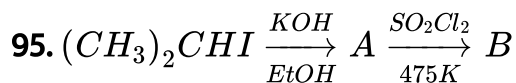
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- A. vinyl chloride
- B. allyl chloride
- C. ethyl chloride
- D. ethyl iodine chloride

Answer: A

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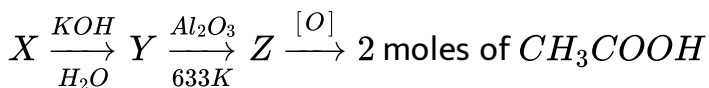
The compound B in the sequence is

- A. Dimethyl sulphate
- B. 1,2-Dichloroethane
- C. 3-Chloropropene
- D. 1-Chloro-2-iodopropane

Answer: C

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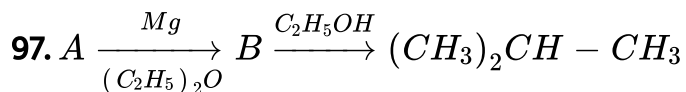
96. In given sequence of reaction predict X



- A. $CH_3CH_2CH(I)CH_3$
- B. $CH_3CH_2CH_2CH_2I$
- C. $CH_3CH(I)CH(I)CH_3$
- D. $CH_3CH(I)CH_2CH_2I$

Answer: A

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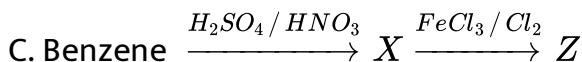
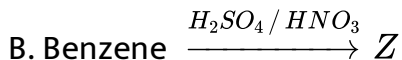
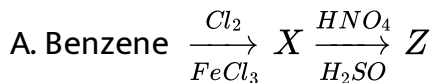
In the above sequence the starting compound A is

- A. 2-Bromobutane
- B. 2-Bromo-2-methylpropane
- C. 1-Bromobutane
- D. 1-Bromo-2-methylpropene

Answer: B

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98. Which of the following sequence would yield m-nitrochlorobenzene (Z) from benzene ?



D. All of these will produce Z.

Answer: C

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99. In order to convert aniline into chlorobenzene the reagents needed are

A. CuCl

B. $NaNO_2 / HCl$ and CuCl

C. Cl_2 / CCl_4

D. $Cl_2 / AlCl_3$

Answer: B



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100. Which of the following halide will have highest dipole moment ?

A. 1,4-Dichlorobenzene

B. Dichloromethane

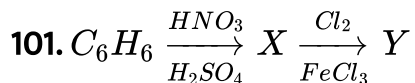
C. Trichloromethane

D. m-Dichlorobenzene

Answer: B



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In the above sequence Y can be

- A. ortho or p-Chloronitrobenzene
- B. 3-Nitrochlorobenzene
- C. only 4-Nitrochlorobenzene
- D. equal mixture of all the above products

Answer: B

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102. On treating phenol with PCl_5 the main product is

- A. Chlorobenzene
- B. Triphenylphosphate

C. Hexachlorobenzene

D. BHC

Answer: B



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103. Arrange the following compounds in order of increasing dipole moment .

Toluene (*I*) m-dichlorobenzene (*II*)

o-dichlorobenzene (*III*) . P-dichlorobenzene (*IV*) .

A. $I < IV < II < III$

B. $IV < I < II < III$

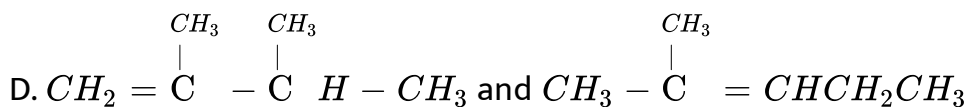
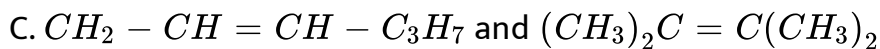
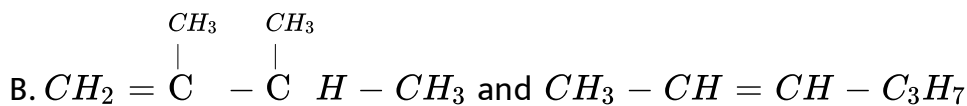
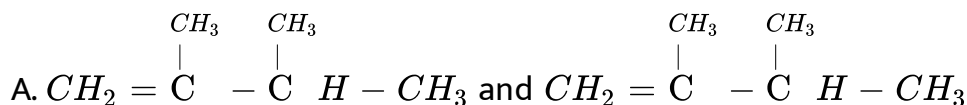
C. $IV < I < III < II$

D. $IV < II < I < III$

Answer: B

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104. An alkyl halide (X) of the formula $C_6H_{13}Cl$ on treatment with potassium tertiary butoxide gives two isomeric alkenes (Y) and (Z) (C_6H_{12}). Both the alkenes on hydrogenation give 2,3-dimethyl butane. Predict the structures of (X), (Y), and (Z)



Answer: A

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105. Benzotrichloride reacts with milk of lime to form

- A. Benzal
- B. Benzoic acid
- C. Benzyl alcohol
- D. Phenol

Answer: B



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106. Which of the following will be hydrolysed with warm water

- A. Chlorobenzene
- B. p-Nitrochlorobenzene

C. 2,4-Dinitrochlorobenzene

D. 2,4,6-Trinitrochlorobenzene

Answer: D

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107. An ethereal solution of 4 – Nitrochlorobenzene is treated with metallic sodium. The product formed is :

A. Aminobenzene

B. 4, 4' – Dinitrodiphenyl

C. *p* – Chloroaniline

D. Benzene diazonium chloride

Answer: B

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108. Carbon-halogen bond is most susceptible to cleave in

- A. Benzyl bromide
- B. Bromobenzene
- C. Vinyl bromine
- D. Benzyl chloride

Answer: A

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109. How many trichloroethanes would be produced when 1,1-Dichloroethane reacts with chlorine ?

- A. One
- B. Two

C. Three

D. Four

Answer: B



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110. Which of the following compounds has the largest dipole moment ?

A. CH_3OH

B. CH_4

C. CF_4

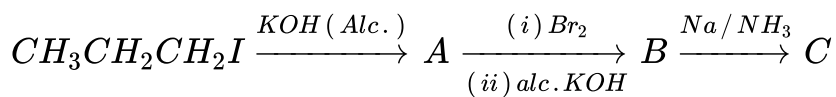
D. CH_3F

Answer: D



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111. In the following sequence of the reactions :



The end product C is :

- A. Alkene
- B. Alkanol
- C. Alkyne
- D. Alkyl amine

Answer: A



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112. The substance employed as a tear gas is

- A. Westron

B. Chloropicrin

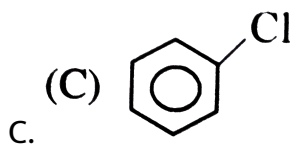
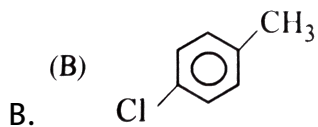
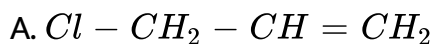
C. Chloretone

D. None of these

Answer: B

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113. Which of the following compounds can be hydrolysed very readily ?



Answer: A

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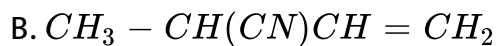
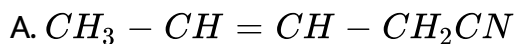
114. S_N1 reaction is favoured by

- A. Polarity of the solvent
- B. Dielectric constant of the solvent
- C. Both A and B
- D. None of the above

Answer: C

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115. The reaction of $CH_3CH = CH - CH_2Cl$ with alcoholic KCN produces



C. Both A and B

D. None of the above

Answer: C

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116. Of the following compounds, which will have a zero dipole moment ?

A. m-Dinitrobenzene

B. trans-1,2-Dichloroethylene

C. cis-1,2-Dichloroethylene

D. 1,4-Dichlorocyclohexane

Answer: B

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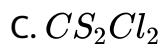
117. The replacement of chlorine of chlorobenzene to give phenol requires drastic conditions, but the chlorine of 2,4-dinitrochlorobenzene is readily replaced since

- A. nitro groups make the aromatic ring electron rich at ortho/para position.
- B. nitro groups withdraw electrons from meta position of the aromatic ring.
- C. nitro groups donate electrons at meta position.
- D. nitro groups withdraw electrons from ortho/para position at the aromatic ring.

Answer: D

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118. Chlorination of CS_2 gives



Answer: B

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119. Which of the following processes does not occur during formation of iodoform from ethanol by the action of NaOH and I_2 ?

A. Iodination

B. Oxidation

C. Hydrolysis

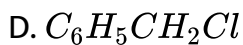
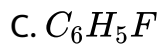
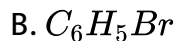
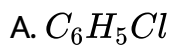
D. Reduction

Answer: D



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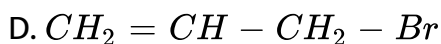
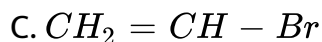
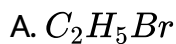
120. Which of the following compounds would be hydrolysed most easily ?



Answer: D

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121. Which of the following compounds would be hydrolysed most easily ?



Answer: D

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122. A good industrial solvent for oils, fats, paints and varnishes is

A. 1,1,2,2-Tetrachloroethane

B. 1,1-Dichloropropanone

C. 1,3-Dichloropropanone

D. 1,2-Dichloroethene

Answer: A



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123. Mustard gas is:

A. Dichlorodiethyl sulphide

B. Dichlorodimethyl sulphide

C. Dichlorodiethyl ether

D. None of these

Answer: A



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124. Which is better solvent than westron

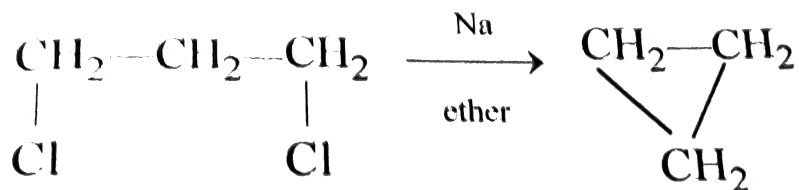
- A. Trichloroethane
- B. 1,1,1-Trichloroethene
- C. 1,1,2-Trichloroethene
- D. Trichloromethanol

Answer: C



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125. The reaction



is known as

- A. Wurtz reaction
- B. Fitting Reaction
- C. Wurtz-Fitting reaction
- D. Freund reaction

Answer: D

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126. Which of the following is not true for S_{N1} reaction ?

- A. It occurs through a single step concerted mechanism
- B. It is favoured by polar solvents
- C. 3° Alkyl halides generally react through this mechanism
- D. Concentration of nucleophile does not affect the rate of such reactions

Answer: A

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127. An alkyl halide on reaction with sodium in the presence of ether gives 2,2,5,5-tetramethylhexane. The alkyl halide is

- A. 1-Chloropentane
- B. 1-Chloro-2,2-dimethylpropane
- C. 3-Chloro-2,2-dimethylbutane

D. 2-Chloro-2methylbutane

Answer: B

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128. Which of the following does not form Grignard reagent on reaction with Mg in the presence of ether ?

A. Chloroethane

B. 1-Chloropropane

C. Bromobenzene

D. Chlorobenzene

Answer: D

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129. 2-Chloro-2-methylpropane on reaction with aqueous KOH gives X as the major product. X is

- A. 2-Methyl-1-butanol
- B. 2-Methyl-1-butene
- C. 2-Methyl-2-butene
- D. 2-Methyl-2-butanol

Answer: C

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130. Out of the following compounds which one will have zero dipole moment ?

- A. Chloromethane
- B. Dichloromethane

C. Trichloromethane

D. Tetrachloromethane

Answer: B

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131. Dipole moment of which of the following is greater than zero ?

A. 1,4-Dichlorobenzene

B. cis-1,2-Dichloroethylene

C. trans-1,2-Dichloroethylene

D. Tetrachloromethane

Answer: D

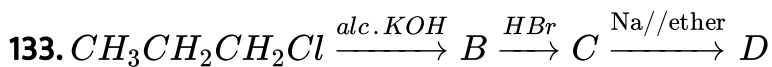
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132. Excess of benzene of reaction with CCl_4 in the presence of anhy. $AlCl_3$ gives

- A. Benzotrichloride
- B. D.D.T
- C. Triphenylchlorobenzene
- D. Triphenylchloromethane

Answer: B

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In the above reaction, the product D is

- A. Propane
- B. 2,3-Dimethylbutane

C. Hexane

D. Allyl bromine

Answer: C



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134. Which of the following compounds can exhibit optical isomerism ?

A. Chlorocyclopropane

B. cis-1,2-Dichlorocyclopropane

C. trans-1,2-Dichlorocyclopropane

D. trans-1,3-Dichlorocyclopropane

Answer: B



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135. Among the isomers of $C_5H_{11}Cl$, which one has a chiral structure ?

A. 2,2-Dimethyl-1-chloropropane

B. 2-Chloropentane

C. 2-Methyl-2-chlorobutane

D. 3-Chloropentane

Answer: B



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136. How many isomeric compounds are possible for $C_2H_2Br_2$?

A. 2

B. 3

C. 4

D. 5

Answer: A



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137. Which of the following factors does not favour S_{N1} mechanism ?

A. Strong nucleophile

B. Polar solvent

C. Low concentration of nucleophile

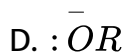
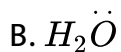
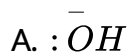
D. 3° alkyl halide

Answer: D



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138. Which of the following nucleophiles favours S_N2 mechanism ?



Answer: C



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139. Which of the following halides would undergo nucleophilic substitution most readily ?

A. 1-Chloro-1-butene

B. 2-Chloro-1-butene

C. 3-Chloro-1-butene

D. 4-Chloro-1-butene

Answer: A



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140. C-Cl bond is least polar in

A. 1-Chloroprop-1-ene

B. 1-Chloropropane

C. 2-Chloropropane

D. 3-Chloroprop-1-ene

Answer: A



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141. Which of the following alkyl chloride yields two isomeric products on further substitution with one chlorine atom ?

A. 1-Chloropropane

B. 2-Chloropropane

C. 1-Chlorobutane

D. 2-Chlorobutane

Answer: B

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142. How many enantiomeric pairs can be obtained by monobromination of isopentane ?

A. 3

B. 1

C. 2

D. 4

Answer: C



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143. Which of the following compounds will react with ethanolic KCN ?

A. Chlorobenzene

B. Allyl bromine

C. Vinyl bromine

D. p-Chlorotoluene

Answer: B



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144. Which of the following statements is not correct ?

- A. C-Cl bond in vinyl chloride is less polar than in CH_3Cl
- B. C-Cl bond in vinyl chloride is stronger than in CH_3Cl
- C. C-Cl bond in vinyl chloride is shorter than in CH_3Cl
- D. Vinyl chloride undergo nucleophilic substitution readily than CH_3Cl

Answer: D

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145. The factor which prevents decomposition of iodoform is

- A. Moisture
- B. Light

C. Air

D. Low temperature

Answer: D



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146. Which of the following is gaseous fumigant ?

A. Ethylene dibromide (EDB)

B. p-Dichlorobenzene (PDCB)

C. D.D.T.

D. B.H.C.

Answer: A



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147. Commonly used moth repellent is

A. P.D.C.B.

B. D.D.T.

C. B.H.C.

D. E.D.B.

Answer: A



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148. A suspension of $CaOCl_2$ in water is heated with ethanol, the product formed is :

A. Ethylene

B. Trichloromethane

C. Ethanol

D. Chloroethane

Answer: B



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149. Chlorofoem can be used in medicine as

A. antipyretic

B. antihistamine

C. anaesthetic

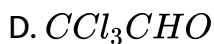
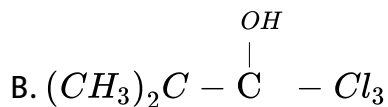
D. antibiotic

Answer: C



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150. Under the influence of air and light chloroform decomposes into



Answer: C

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151. Isopropyl alcohol is heated with a suspension of bleaching powder ($CaOCl_2$) with water. The products are :

A. Ethane and propane

B. Ethyne and ethene

C. Trichloromethane and cal. Acetate

D. Carbon tetrachloride

Answer: C

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152. Which of the following reacting substances will not liberate ethyne gas ?

A. CH_3Cl and Ag

B. CaC_2 and H_2O

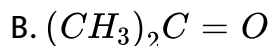
C. CHI_3 and Ag

D. $CHCl_3$ and Ag

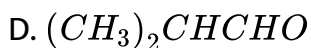
Answer: A

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153. Which of the following on reaction with chloroform will give chloroform ?



C. Chloral



Answer: B

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154. A sample of chloroform being used as anaesthetic is tested by .



B. Fehling solution

C. $AgNO_3(aq)$ after boiling with KOH

D. Any of the above.

Answer: A

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155. In which of following molecules the carbon-chlorine bond is shorter ?

A. Chloromethane

B. Chloroethane

C. Chlorobenzene

D. Benzylchloride

Answer: C

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156. Ullmann reaction involves the use of following reactants :

- A. Iodobenzene and sodium
- B. Benzene and copper
- C. Iodobenzene and copper powder
- D. Benzene diazonium chloride and Cu/HCl

Answer: C

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157. One among the following compounds is most likely to produce potassium carbonate on warming with potassium hydroxide

- A. Dichloromethane
- B. Tetrachloromethane

C. Chloroform

D. None of these

Answer: B



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158. Distillation of bleaching powder and acetone gives

A. $CHCl_3$

B. Chloral

C. CH_3Cl

D. CCl_4

Answer: A



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159. Formation of chloroform from ethyl alcohol and bleaching powder does not involve

- A. Oxidation
- B. Halogenation
- C. Reduction
- D. Hydrolysis

Answer: C

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160. The hydrogen atom in chloroform is

- A. Acidic
- B. Basic
- C. Neutral

D. None of the above

Answer: A

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161. A penta atomic organic compound has a molecular mass of 253.

The molecular formula of the compound is



Answer: A

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162. Chloroform on reaction with acetone yields ,

- A. insecticide
- B. analgesic
- C. isocyanide
- D. hypnotic

Answer: D



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163. Iodoform gives yellow ppt. with aq. $AgNO_3$ on heating but chloroform doesnot give any ppt. because

- A. C-I bond in iodoform is weaker than C-Cl bond of chloroform
- B. Iodoform is covalent, chloroform is ionic
- C. Iodoform is highly unstable, chloroform is highly stable

D. None of the above

Answer: A



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164. Function of bleaching powder in the preparation of chloroform is :

A. as an oxidising agent

B. as a bleaching agent

C. as an oxidising, chlorinating and hydrolysing agent

D. All the above

Answer: C



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165. When a solution of NaCl containing C_2H_5OH is electrolysed it forms :

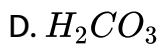
- A. CCl_4
- B. CHI_3
- C. CH_2Br_2
- D. C_2H_5OH

Answer: B

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166. A penta atomic organic compound has mol. mass 394. It also gave ethyne gas by reaction with silver powder. The compound can be

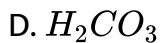
- A. CCl_4



Answer: B

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167. Fire extinguisher Pyrene is :



Answer: B

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168. Carbon tetrachloride on heating with phenol and sodium hydroxide gives

- A. Salicyclic acid
- B. Salicyladehyde
- C. Salol
- D. Aspirin.

Answer: A



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169. Which of the following cannot be used for the preparation of iodoform ?

- A. acetone

B. methanol

C. ethanol

D. acetaldehyde

Answer: B

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170. When propane is treated with Cl_2 at $400^\circ C$ and 74-100 atm pressure, the products obtained are

A. Propyl chloride

B. CCl_4 and C_2Cl_6

C. $CH_3CH_2CHCl_2$

D. $CHCl_3$ and CH_3CH_2Cl

Answer: B



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171. Iodoform can be prepared from all except

- A. Isopropylalcohol
- B. 3-Methyl-2-butanone
- C. Isobutylalcohol
- D. Ethyl methyl ketone

Answer: C



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172. Which of the following cannot react with sodium hypoiodite ?

- A. Methanol
- B. Ethanol

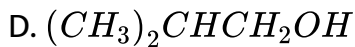
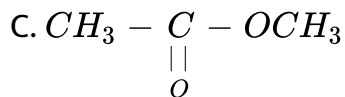
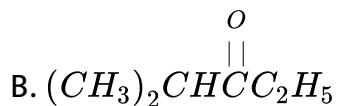
C. 2-Propanol

D. All of these will react

Answer: A

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173. Iodoform can be obtained on warming $NaOH$ and iodine with :



Answer: A

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174. Which of the following is a geminal dihalide ?

- A. Ethylene dibromide
- B. Propylidenechloride
- C. Isopropylbromide
- D. None of above

Answer: B

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175. Which types of isomerism is shown by the following pairs of compounds : Ethylene dichloride and ethylidene dichloride ?

- A. Chain isomerism
- B. Position isomerism

C. Metamerism

D. Tautomerism

Answer: B



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176. Ethylene dibromide is heated with metallic zinc in the presence of alcohol. The gas so produced in the presence of alcohol. The gas so produced is allowed to react with hydrogen bromide. The product is :

A. Ethylene dibromide

B. Ethyl bromide

C. Ethylenedene bromide

D. None of above

Answer: B

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177. Hydrolysis of CH_3CHCl_2 gives

A. CH_3CHO

B. $CHCl_3$

C. CH_3COOH

D. CH_3CH_2OH

Answer: A

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178. The product formed by the reaction between 2,2,2-trichloroethanal (chloral) and chlorobenzene in H_2SO_4 is

- A. chloretone
- B. D.D.T
- C. chlorobenzaldichloride
- D. benzene sulphonic acid

Answer: B



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179. Lindane can be obtained by the reaction of benzene with

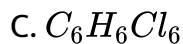
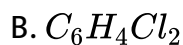
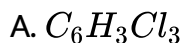
- A. CH_3Cl /anhy. $AlCl_3$
- B. Cl_2 /Sunlight
- C. C_2H_5I /anhy. $AlCl_3$
- D. CH_3COCl / $AlCl_3$

Answer: B



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180. Gammexane is the name given to



D. Diphenyltrichloroethane.

Answer: C



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181. Which of the following represents Freon ?

A. Acetylene tetrachloride

B. Trichloroethylene

C. Dichlorodifluoromethane

D. Ethylene dichloride

Answer: C

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182. Which one of the following is used as a general anaesthetic in place of diethyl ether ?

A. Chloroform

B. $CF_3 - CHClBr$

C. $CF_3 - CHBr_2$

D. None

Answer: B

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183. The compound $Cl_2C = CHCl$ is known as westrosol. Which one of the following statement is wrong regarding this compound ?

- A. It is used as a solvent
- B. It is used in refrigerators
- C. It is used as a degreasing agent
- D. It is obtained by reating westron with $Ca(OH)_2$.

Answer: B

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184. Which of the following is known as camphor substitute ?

- A. C_2Cl_6
- B. $CHCl_3$

C. CF_3 . $CHClBr$

D. CF_2Cl_2

Answer: A

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185. Which of the following reagent is used as a refrigerant ?

A. CCl_4

B. CH_2Cl_2

C. CF_2Cl_2

D. CF_4

Answer: C

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186. Geminal dihalides on hydrolysis give

- A. Ketones
- B. Aldehydes
- C. Ketones or aldehydes
- D. Alcohols

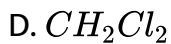
Answer: C



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187. Pyrene is the trade name of CCl_4 when used as fire extinguisher

- A. CCl_4
- B. CHCl_3
- C. CO_2

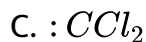


Answer: A



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188. In the reaction of phenol with $CHCl_3$ and aqueous $NaOH$ at 70° , the electrophile attacking the ring is:



Answer: C



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189. Chloral on treatment with aqueous NaOH produces

- A. Ethanal
- B. Propanol
- C. Chloroform
- D. Chloroethanal

Answer: C

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190. IUPAC name of Gammexane is

- A. Hexachlorobenzene
- B. Benzene hexachloride
- C. 1, 2, 3, 4, 5, 6-Hexachlorocyclohexane
- D. None of these

Answer: C

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191. Which of the following compounds will not give a yellow ppt. with iodine and alkali ?

- A. Ethanal
- B. Ethanol
- C. 1-Propanol
- D. 2-Propanol

Answer: C

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192. Vinyl chloride and ethyl chloride can be distinguished by

A. Lucas reagent

B. KOH , HNO_3 , $AgNO_3$

C. $AgCl$

D. $HCl/AgCl$

Answer: B



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193. Allyl bromide and n-propyl bromide can be distinguished by

A. $AgNO_3$ (alc.)

B. $NaOH$

C. Tollen's reagent

D. Baeyer's reagent

Answer: D



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194. A mixture of 1-chlorobutane and 2-chlorobutane when treated with alcoholic KOH gives:

- A. But-1-ene
- B. But-2-ene
- C. Isobutylene
- D. Mixture of But-1-ene and But-2-ene

Answer: D



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195. Chlorobenzene and benzyl chloride are distinguished by

A. treatment with aq. KOH followed by neutralisation with

HNO_3 and then $AgNO_3$ solution

B. Lucas reagent

C. decolourisation of Br_2 in CCl_4

D. orange red colour with $CHCl_3 / AlCl_3$

Answer: A



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196. Which of the following reagent will be able to distinguish between vinyl bromine and n-propyl bromide ?

A. aqueous $AgNO_3$

B. $NaOH$, HNO_3 , $AgNO_3$

C. $K_2Cr_2O_7 / H_2SO_4$

D. Tollen's reagent

Answer: B



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197. Vicinal and geminal dihalides are not distinguished by

A. KCN/hydrolysis

B. Alcoholic KOH

C. aq. KOH

D. Both A and B

Answer: B



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198. Ethylene dichloride and ethylidene chloride are isomeric compound . Identify the statement which is not applicable to both of them:

- A. react with alcoholic KOH to give same product.
- B. give same product with aqueous KOH
- C. are dihalides
- D. react with zinc.

Answer: B

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199. Ethylene dichloride and ethylidene chloride are isomeric compound . Identify the statement which is not applicable to both of them:

- A. Both of them are dihalogen derivatives
- B. Both of them gives Beilstein's test
- C. Both of them react with alcoholic KOH and give same product
- D. Both of them react with aqueous KOH and give the same product.

Answer: D

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200. Wthylene dichloride and ethylide dichloreide yield same product with

- A. Zn dust
- B. Alcoholic KOH
- C. Aqueous KOH

D. None of these

Answer: B

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Revision Questions From Competitive Exams

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

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

B. NaCl

C. PCl_5

D. SOCl_2

Answer: B

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2. Carbon atom holding halogen in aryl halides is

- A. sp^2 -hybridised
- B. sp^3 -hybridised
- C. sp-hybridised
- D. sp^3d -hybridised.

Answer: A

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3. 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 stabilization

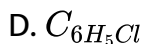
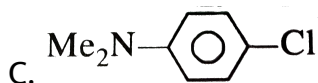
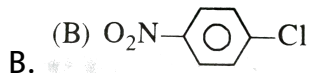
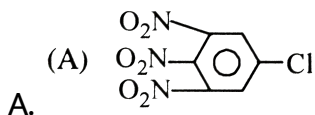
C. larger carbon-halogen bond

D. the inductive effect

Answer: B

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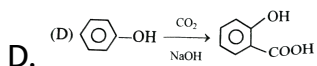
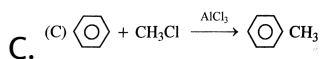
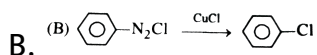
4. Which chloroderivative of benzene among the following would undergo hydrolysis most readily with aqueous sodium hydroxide to furnish the corresponding hydroxyderivative ?



Answer: A

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5. Sandmeyer Reaction



Answer: B

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6. Which of the following with aqueous KOH will give acetaldehyde ?

A. 1,2-Dichloroethane

B. 1,1-Dichloroethane

C. Chloroacetic acid

D. Ethyl chloride

Answer: B



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7. DDT is formed from

A. Benzene and Chlorobenzene

B. Chloral and Chlorobenzene

C. Chloral and Benzene

D. Chlorobenzene and chlorine.

Answer: B



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8. Ethyl chloride on treatment with aqueous alkali gives

- A. Ethane
- B. Ethene
- C. Ethanal
- D. Ethanol

Answer: D



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9. The molecular formula of a saturated compound is $C_2H_4Br_2$. The formula permits the existence of two

- A. Functional isomers

B. Position isomers

C. Optical isomerism

D. cis-trans isomerism.

Answer: B



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10. The reaction of chloroform with alcoholic KOH and p-toluidine form-

A. CH_3OH

B. CH_3NC

C. C_2H_5NC

D. C_2H_5CN

Answer: C



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11. What happens when CCl_4 is treated with $AgNO_3$ solution ?

- A. NO_2 will be evolved
- B. A white ppt. of $AgCl$ will form
- C. CCl_4 will dissolve in $AgNO_3$ solution
- D. Nothing will happen.

Answer: D



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

- A. m-Chlorotoluene

B. Benzyl chloride

C. o & p-Chlorotoluene

D. Benzoyl chloride

Answer: C

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13. The most reactive compound for electrophilic nitration will be

A. Benzyl chloride

B. Benzoic acid

C. Nitrobenzene

D. Chlorobenzene

Answer: A

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14. Ethyl bromide reacts with lead -sodium alloy to form

- A. Tetraethyl lead
- B. Tetraethyl lead bromide
- C. Both
- D. None

Answer: A

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15. For the carbylamine reaction we need hot alc. KOH and

- A. any amine and chloroform
- B. chloroform and Ag powder

C. a primary amine and chloroform

D. a mono alkyl amine and trichloromethane

Answer: C



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16. D.D.T. is

A. An insecticide

B. Bleaching agent

C. Hypnotic

D. Oxidising agent

Answer: A



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17. The reaction between primary amine, chloroform and alcoholic caustic potash is called

- A. Wurtz reaction
- B. Frankland reaction
- C. Cannizzaro's reaction
- D. Carbylamine reaction

Answer: D

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18. Phosgene is the common name for

- A. Mixture of CO_2 and Cl_2
- B. $POCl_3$
- C. Carbonyl chloride

D. Carbon tetrachloride

Answer: C

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19. Benzene hexachloride is used as

A. Dye

B. Antimalarial drug

C. Antibiotic

D. Insecticide

Answer: D

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20. The reaction between alkyl halides and sodium metal is called

- A. Wurtz reaction
- B. Kolbe's reaction
- C. Clemmensen's reaction
- D. Finkelstein reaction

Answer: A



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21. Cl_2 reacts with CS_2 in presence of I_2 catalyst to form

- A. $CHCl_3$
- B. CCl_4
- C. C_2H_5Cl

D. C_2H_6

Answer: B

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22. Slow oxidation of chloroform in air leads to

A. Formyl chloride

B. Formic acid

C. $COCl_2$

D. Trichloroacetic acid

Answer: C

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23. Which of the following will not give the iodoform test?

- A. Ethanol
- B. Ethanal
- C. Acetophenone
- D. Benzophenone

Answer: D



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24. The reaction of t-Butylbromide with sodium methoxide produces mainly

- A. Isobutane
- B. Isobutylene

C. t-Butyl methyl ether

D. Sodium tert-butoxide

Answer: B

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

- A. longer and weaker
- B. shorter and weaker
- C. shorter and stronger
- D. longer and stronger

Answer: C

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27. C-X bond is strongest in :

- A. CH_3Cl
- B. CH_3Br

C. CH_3F

D. CH_3I

Answer: C

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28. Insecticide Gammexane is

A. DDT

B. BHC

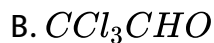
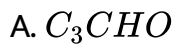
C. Chloral

D. None of the above

Answer: B

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



Answer: C



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30. For converting aniline into chlorobenzene which of the following reagent is not used



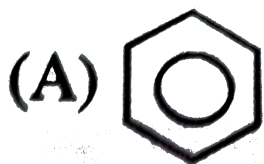
C. HNO_2

D. $CuCl$

Answer: A

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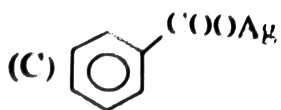
31. Silver benzoate will react with bromine in acetone to give



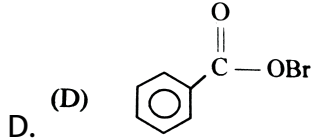
A.



B.



C.



Answer: B

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32. The alkyl halide is converted into an alcohol by

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

Answer: B

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

- A. Elimination
- B. Substitution
- C. Addition
- D. None of these

Answer: B

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34. The reaction $CH_2 = CH - CH_3 + HBr \rightarrow CH_3 - \overset{Br}{\underset{|}{CH}}CH_3$

is

- A. Nucleophilic addition
- B. Electrophilic addition

C. Electrophilic substitution

D. Free radical addition

Answer: B



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

A. Chlorophenol

B. Chlorotoluene

C. Chlorobenzene

D. Benzyl chloride

Answer: D

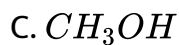


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36. The chloroform reacts with NaOH to give



B. Sodium oxalate



D. HCOONa

Answer: D

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37. When ethyl iodide and n-propyl iodide are allowed to react with sodium metal in ether, the number of alkanes that could be produced is

A. only one

B. two alkanes

C. three alkanes

D. four alkanes

Answer: C



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38. Iodoethane reacts with sodium in ether, the product formed is

A. Pentene

B. Propyne

C. Butene

D. Butane

Answer: D



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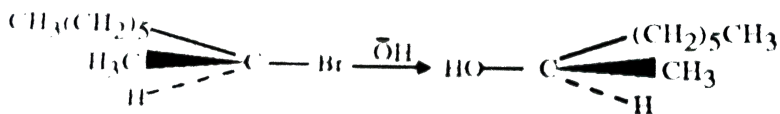
39. Which of the following reacts with chloroform and base to form phenyl isocyanide ?

- A. Nitrobenzene
- B. Phenol
- C. Chlorobenzene
- D. Aniline

Answer: D

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40. The reaction described below is :



A. SE^2

B. S_{N1}

C. S_{N0}

D. S_{N2}

Answer: D



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41. The replacement of chlorine of chlorobenzene to give phenol requires drastic conditions, but the chlorine of 2,4-dinitrochlorobenzene is readily replaced since

A. NO_2 makes the electron rich ring at ortho and para positions

B. NO_2 withdraws electrons at meta position

C. NO_2 donate electrons at m-position

D. NO_2 withdraws electrons at ortho and para positions

Answer: D

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42. 1,3-Dibromopropane reacts with metallic zinc to form

A. Propene

B. Propane

C. Cyclopropane

D. Hexane

Answer: C

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43. $C_6H_6Cl_6$ can be obtained from :

- A. HCl and Benzene
- B. Cl_2 and Benzene and $AlCl_3$
- C. Cl_2 and Benzene in diffused light
- D. NaOCl and Benzene

Answer: C



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44. $CH_3 - CH = CH_2 + HI \rightarrow X$. Here X is

- A. $CH_3CH_2CH_2I$
- B. CH_3CHICH_3
- C. $CH_3CH_2CH_3$



Answer: B

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45. Ethyl alcohol gives ethyl chloride with the help of



Answer: A

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46. S_N2 mechanism proceeds through the formation of

- A. Carbonium ion
- B. Transition state
- C. Free radical
- D. Carbonion

Answer: B



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47. Chlorobenzene on heating with aqueous NH_3 under pressure in the presence of cuprous chloride gives

- A. Benzamide
- B. Nitrobenzene

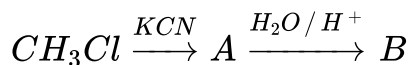
C. Aniline

D. Chloroaminobenzene

Answer: C

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48. The end product (B) in the following sequence of reactions is



A. CH_3COOH

B. $HCOOH$

C. CH_3NH_2

D. CH_3COCH_3

Answer: A

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49. 2-bromopentane is heated with potassium ethoxide in ethanol

The major product obtained is .

A. 2-Ethoxypentane

B. Pent-1-ene

C. cis-Pent-2-ene

D. trans-Pent-2-ene

Answer: D

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50. Both methane and ethane may be obtained by suitable one step reaction from

A. C_2H_4

B. CH_3OH

C. CH_3Br

D. CH_3CHO

Answer: C

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51. 1-chlorobutane reacts with alcoholic KOH to form

A. But-1-ene

B. Butan-1-ol

C. But-2-ene

D. Butan-2-ol

Answer: A

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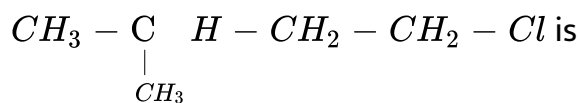
52. Butanenitrile may be prepared by heating

- A. Propyl alcohol
- B. Butyl chloride
- C. Butyl alcohol
- D. Propyl chloride

Answer: D

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53. The IUPAC name of the compound



- A. 1-Chloro-3-methylbutane

B. 2-Methyl-4-chlorobutane

C. 2-Methyl-1-chlorobutane

D. 1-Chloropentane

Answer: A

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54. Ethyl bromide on treatment with alcoholic KOH gives

A. Ethylene

B. Ethanol

C. Acetic acid

D. Ethane

Answer: A

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55. $AgNO_3$ does not give precipitate with $CHCl_3$ because .

- A. $CHCl_3$ is insoluble in water
- B. $CHCl_3$ does not ionise in water
- C. $CHCl_3$ is an organic compound
- D. $AgNO_3$ is insoluble in $CHCl_3$

Answer: B

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

- A. Nickel
- B. $AlCl_3$

C. Bright sunlight

D. Zinc

Answer: C



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

A. C_2H_5Cl

B. C_2H_5Br

C. C_2H_5I

D. CH_3I

Answer: D



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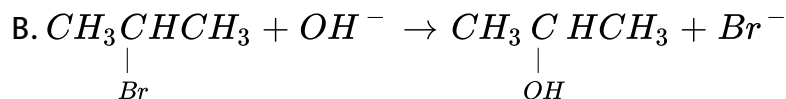
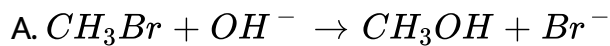
58. Gammexane is

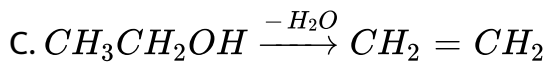
- A. Chlorobenzene
- B. Benzyl chloride
- C. Bromobenzene
- D. Benzene hexachloride

Answer: D

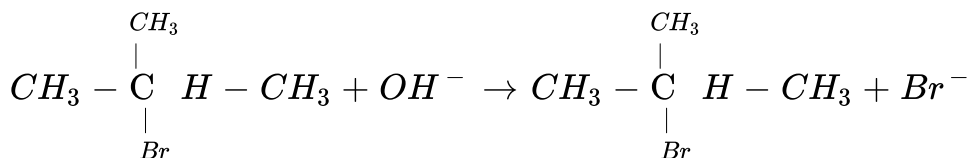
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59. Which of the following is the example of S_N2 reaction .





D.



Answer: A

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60. Which of the following possesses highest melting point ?

- A. Chlorobenzene
- B. o-Dichlorobenzene
- C. m-Dichlorobenzene
- D. p-Dichlorobenzene

Answer: D



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61. Tetrabromoethane on treatment with alcoholic zinc gives

- A. Ethylbromide
- B. Ethane
- C. Ethane
- D. Ethyne

Answer: D



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62. S_N1 reaction of alkylhalides leads to

- A. retention of configuration
- B. racemisation

C. inversion of configuration

D. None of these

Answer: B



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

A. 1

B. 2

C. 3

D. 5

Answer: B



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64. What would be the product when propene reacts with chlorine in presence of CCl_4

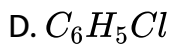
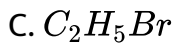
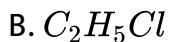
- A. PVC
- B. Allyl chloride
- C. Vinyl chloride
- D. 1,2-Dichloroethane

Answer: B

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65. Which halide among the following is used as methylating agent ?

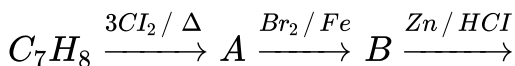
- A. CH_3I



Answer: A

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66. The compound C_7H_8 undergoes the following reactions



The product 'C' is .

A. 3-Bromo, 2,4,6-trichlorotoluene

B. o-bromotoluene

C. p-bromotoluene

D. m-bromotoluene

Answer: D

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67. Cyanoform is _____ acid in nature than chloroform. The missing word is

A. Stronger

B. Weaker

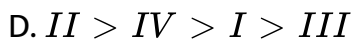
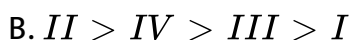
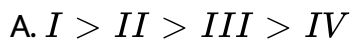
C. Amphoteric

D. Neutral

Answer: A

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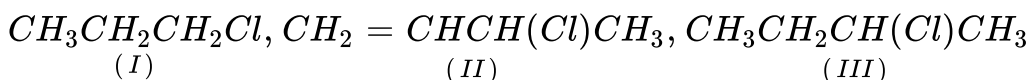
68. The decreasing order of reactivity of *m* – nitrobromobenzene (I), 2, 4, 6-trinitrobromo-benzene (II), *p* – nitrobromobenzene (III), and 2,4-dinitrobromobenzene (IV), towards OH^- ions is:



Answer: B

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69. Arrange the following halides in the decreasing order of S_{N1} reactivity :



A. I gt II gt III

B. II gt I gt III

C. II gt III gt I

D. III gt II gt I

Answer: C



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70. To get DDT, chlorobenzene has to react with one of the following compound in the presence of conc. H_2SO_4

A. Trichloroethane

B. Dichloroacetaone

C. Dichloroacetaldehyde

D. Trichloroacetaldehyde

Answer: D

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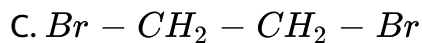
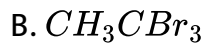
71. Alkyl halides react with Mg in dry ether to form

- A. Magnesium halide
- B. Grignard's reagent
- C. Alkene
- D. Alkyne

Answer: B

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72. Ethylene reacts bromine to form-



Answer: C

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73. Match List I (compound) with List II (use) and select the correct answer using the codes given below the lists

List I

List II

I Acetyl salicylic acid

(a) Insecticide

II D.D.T.

(b) Drug

III Napthalene

(c) Moth repelling

IV Carbon tetrachloride

(d) Fire extinguisher

(e) Refrigerant

Codes.

A. I b, II a, III c, IV d

B. I e, II c, III d, IV a

C. I b, II c, III d, IV a

D. I e, II a, III c, IV d

Answer: A



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74. o-Methoxybromobenzene is treated with sodamide and then with ammonia. The product formed is

A. o-Methoxybromobenzene

B. Aniline

C. Methoxybenzene

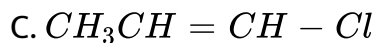
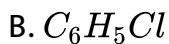
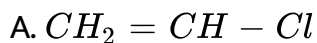
D. m-Methoxyaniline

Answer: D



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



Answer: D



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76. Which one of the following will have the maximum dipole moment



Answer: B



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77. Isopropyl chloride undergoes hydrolysis by :

A. S_N1 mechanism

B. S_N2 mechanism

C. S_N1 and S_N2 and S_N2 mechanism.

D.

Answer: C



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78. $CH_3 - CH_2 - \underset{\substack{| \\ Cl}}{CH} - CH_3$ obtained by chlorination of n-

butane will be :

A. mesoform

B. racemic mixture

C. d-form

D. l-form

Answer: B



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79. On warming with silver powder, chloroform is converted into

A. acetylene

B. hexachloroethane

C. ethylene

D. carbon

Answer: A



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80. A compound that will form an offensive smell when heated with chloroform and alcoholic potash is

A. $C_2H_5NH_2$

B. $(C_2H_5)_2NH$

C. $(CH_3)_3N$

D. CH_3CN

Answer: A

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81. The reaction of an alkyl halide with RCOOAg produces

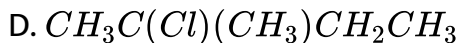
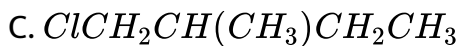
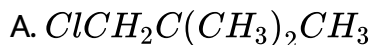
- A. ester
- B. ether
- C. aldehyde
- D. ketone

Answer: A

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82. An alkyl chloride produces a single alkene on reaction with sodium ethoxide and ethanol. The alkene further undergoes

hydrogenation to yield 2-methylbutane. Identify the alkyl chloride from amongst the following :



Answer: C



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83. Which of the following are environmentally hazardous refrigerants responsible for ozone depletion in the stratosphere ?

A. methane

B. carbon dioxide

C. water

D. chlorofluorocarbons

Answer: D



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84. In S_{N1} (substitution, nucleophilic, unimolecular) reaction, the racemization takes place, it is due to

A. inversion of configuration

B. retention of configuration

C. conversion of configuration

D. Both A and B

Answer: D



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85. Unpleasant smell of carbylamine is obtained when chloroform and alcoholic KOH are heated with

- A. any aromatic amine
- B. any primary amine
- C. any amine
- D. any aliphatic amine

Answer: B

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86. When primary amine reacts with chloroform in ethanolic KOH, then the product is

- A. an isocyanide

B. an aldehyde

C. a cyanide

D. an alcohol

Answer: A



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87. Grignard reagent is not prepared in aqueous medium but prepared in ether medium, because

A. the reagent is highly reactive in ether

B. the reagent does not react with water

C. the reagent becomes inactive in water

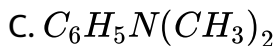
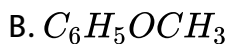
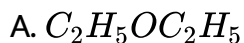
D. the reagent reacts with water

Answer: D



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88. Mg reacts with RBr best in



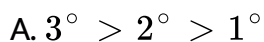
D. Equally in all the three

Answer: A



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89. The order of reactivity of alkyl halides towards elimination reaction is



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

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

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

Answer: A

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90. Most reactive halide towards S_N1 reactions is

A. n-Butyl chloride

B. sec-Butyl chloride

C. tert-Butyl chloride

D. All chloride

Answer: D

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91. The set of compounds in which the reactivity of halogen atom in the ascending order is .

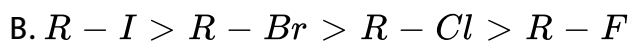
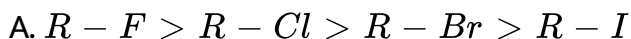
- A. chlorobenzene, vinyl chloride, chloroethane
- B. chloroethane, chlorobenzene, vinyl chloride
- C. vinyl chloride, chlorobenzene, chloroethane
- D. vinyl chloride, chloroethane, chlorobenzene

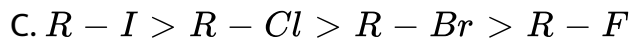
Answer: A



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92. Reactivity order of halides of dehydrohalogenation is

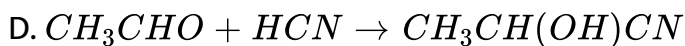
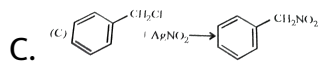
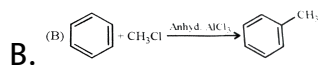
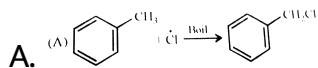




Answer: B

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93. Which of the following is a free radical substitution reaction?



Answer: A

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94. When CHCl_3 is boiled with NaOH It gives .

- A. formic acid
- B. trihydroxymethane
- C. acetylene
- D. sodium formate

Answer: D



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95. Allyl chloride on dehydrochlorination gives

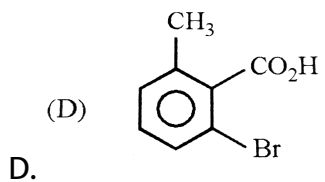
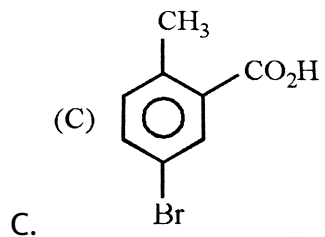
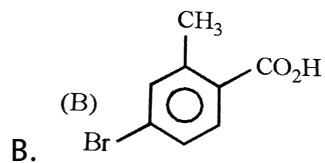
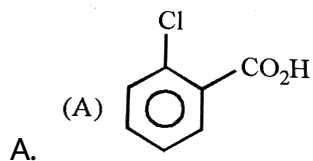
- A. propadiene
- B. propylene
- C. acetyl chloride

D. acetone

Answer: A

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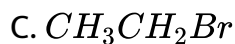
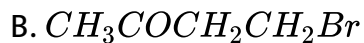
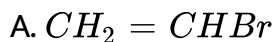
96. *o*-Toluic acid on reaction with $Br_2 + Fe$ gives



Answer: C

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97. Among the following the most reactive with alcoholic KOH is .



Answer: D

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98. Which responds to + ve iodoform test ?

A. Butanol-1

B. Butan-1-al

C. Butanol-2

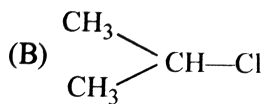
D. 3-pentanone

Answer: C

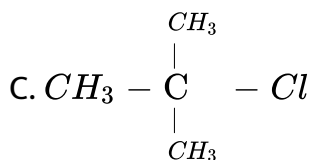
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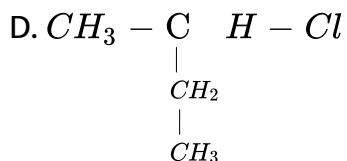
99. S_N1 reaction is faster in

A. CH_3CH_2Cl



B.

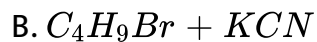
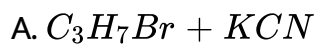




Answer: C

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100. In which case formation of butane nitrile is possible ?



Answer: A

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101. Which represents nucleophilic aromatic substitution reaction ?

- A. Reaction of benzene with Cl_2 in sunlight
- B. Benzyl bromide hydrolysis with water
- C. Reaction of NaOH with dinitrofluoro benzene
- D. Sulphonation of benzene

Answer: C



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102. The product formed on reaction of ethyl alcohol with bleaching powder is .

- A. CH_3OH
- B. $CH_3 - CH_2 - OH$
- C. $CHCl_3$

D. Both (A) and (B)

Answer: C

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103. Which of the following compounds gives trichloromethane on distilling with bleaching powder ? .

A. methanal

B. phenol

C. ethanol

D. methanol

Answer: C

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104. Which of the following statements about benzyl chloride is incorrect ?

- A. it is less reactive than alkyl halides
- B. it can be oxidised to benzaldehyde by boiling with copper nitrate solution
- C. it is a lachrymatory liquid and answers Beilstein's test
- D. it gives a white precipitate with alcoholic silver nitrate

Answer: A

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105. tert-Alkyl halides are practically inert to substitution by S_N2 mechanism because of :

- A. insolubility

B. instability

C. inductive effect

D. steric hindrance

Answer: D

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106. Alkyl halides react with dialkyl copper reagents to give

A. alkenes

B. alkyl copper halides

C. alkanes

D. alkenyl halides

Answer: C

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107. Which of the following undergoes nucleophilic substitution exclusively by S_N1 mechanism?

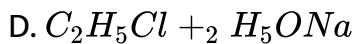
- A. Benzyl chloride
- B. Ethyl chloride
- C. Chlorobenzene
- D. Isopropyl chloride

Answer: A

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108. In which of the following reactions, the product is an ether ?

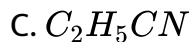
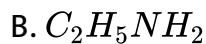
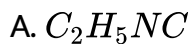
- A. $C_6H_6 + CH_3COCl / \text{anhydrous } AlCl_3$
- B. $C_2H_5Cl + aq. KOH$



Answer: D

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109. When ethyl chloride is heated with $AgCN$, the main product is :

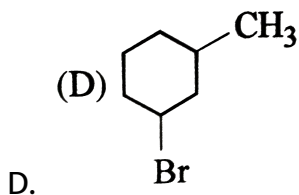
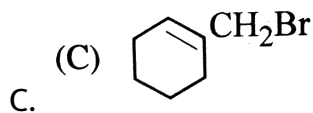
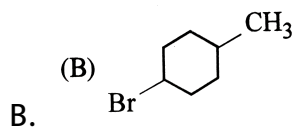
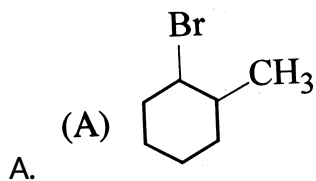
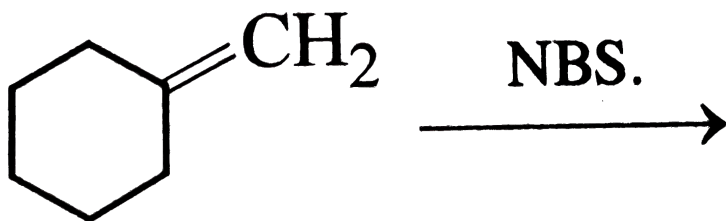


D. None of these

Answer: C

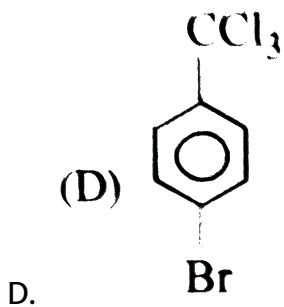
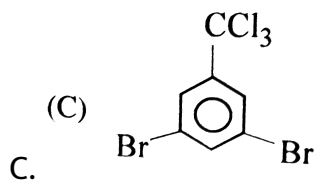
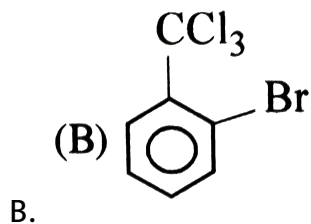
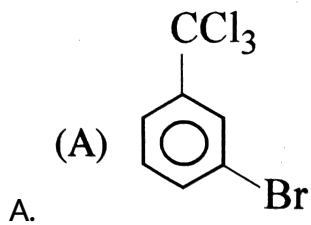
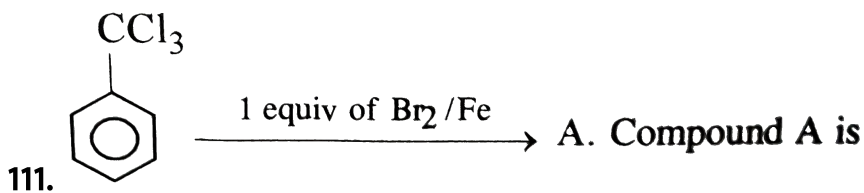
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110. What will be the product in the following reaction ?



Answer: C

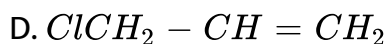
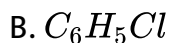
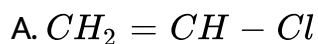
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Answer: A

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



Answer: D

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

- A. Chlorobenzene and chloroform
- B. Chlorobenzene and chloromethane
- C. Chlorobenzene and chloral
- D. Chlorobenzene and iodoform

Answer: C

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114. When 32.25 g of ethyl chloride is subjected to dehydrohalogenation reaction, the yield of alkene formed is 50%. The mass of the product formed is (atomic mass of Cl = 35.5)

- A. 14 g
- B. 28 g
- C. 66.5g

D. 7 g

Answer: D

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115. Chlorination of toluene in the presence of light and heat followed by treatment with aqueous $NaOH$ gives

A. o-cresol

B. p-cresol

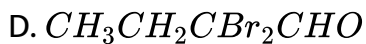
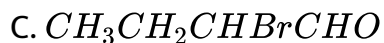
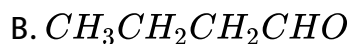
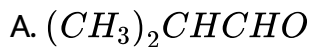
C. mixture of o-cresol and p-cresol

D. benzoic acid

Answer: D

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116. Which of the following compounds is expected to be optically active ?

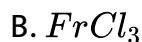


Answer: C



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117. The catalyst used in the preparation of an alkyl chloride by the action of dry HCl on an alcohol is



C. anhydrous $ZnCl_2$

D. Cu

Answer: C



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

A. chlorobenzene

B. benzaldehyde

C. aniline

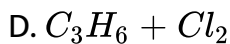
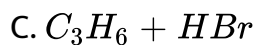
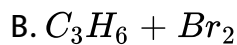
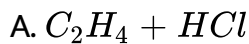
D. benzoic acid

Answer: A



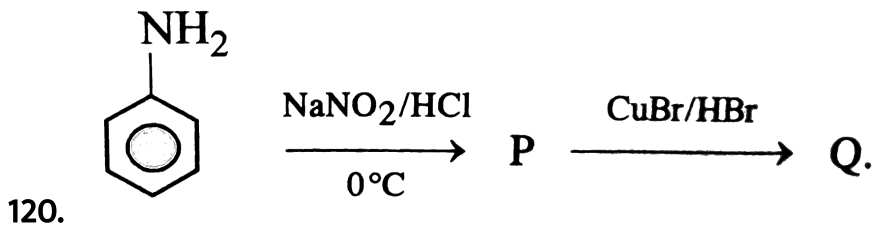
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119. Markownikoff rule is best applicable to



Answer: C

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The compound Q is

A. bromobenzene

B. chlorobenzene

C. benzyl bromide

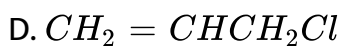
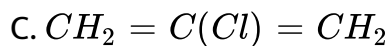
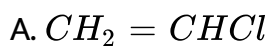
D. benzyl chloride

Answer: A



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121. The halogen compound which most readily undergoes nucleophilic substitution is



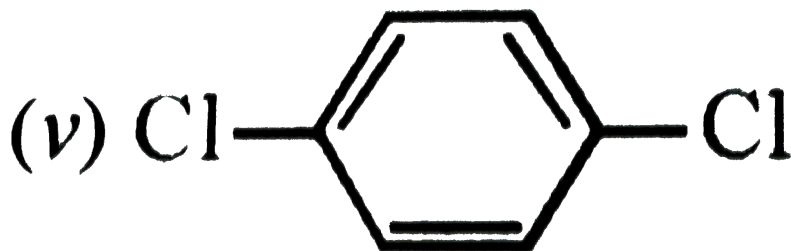
Answer: D

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122. Consider the following halogen containing compounds

(i) $CHCl_3$ (ii) CCl_4

(iii) CH_2Cl_2 (iv) CH_3Cl



The compounds with a net zero dipole moment are

A. (ii) and (v) only

B. (ii) only

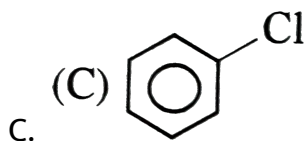
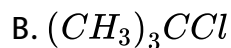
C. (iii) and (iv) only

D. (i) and (ii) only

Answer: A

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123. Which is least reactive towards nucleophilic substitution (S_N2)



Answer: C

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124. An alkyl halide by formation of its Grignard reagent and heating with water gives propane. What is the original alkyl halide?

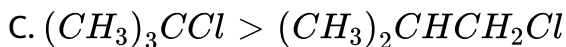
- A. methyl iodide
- B. ethyl iodide
- C. ethyl bromide
- D. propyl bromide

Answer: D

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125. Which one of the following is not the correct order of boiling points of alkyl / aryl halides?

- A. $CHCl_3 > CH_2Cl_2$
- B. $CH_3(CH_2)_3Cl > CH_3(CH_2)_2Cl$

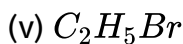
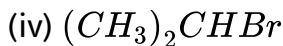
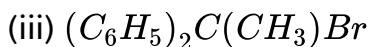
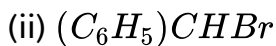
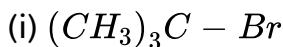


Answer: C



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126. The S_{N1} reactivity of the following halides will be in the order:



A. (v) gt (iv) gt (i) gt (ii) gt (iii)

B. (ii) gt (iii) gt (v) gt (i) gt (iv)

C. (i) gt (iii) gt (v) gt (ii) gt (iv)

D. (iii) gt (ii) gt (i) gt (iv) gt (v)

Answer: D

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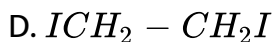
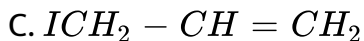
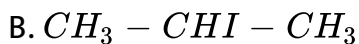
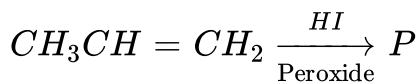
127. A cyclic stereoisomers having the molecular formula C_4H_7Cl are classified and tabulated. Find out the correct set of numbers.

- | | | |
|----|-------------|---------|
| A. | Geometrical | Optical |
| | 6 | 2 |
| B. | Geometrical | Optical |
| | 4 | 2 |
| C. | Geometrical | Optical |
| | 6 | 0 |
| D. | Geometrical | Optical |
| | 4 | 0 |

Answer: A

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128. The major product P in the following reaction is



Answer: B



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129. Alkyl halides are less soluble in water because

A. They ionize in water

B. They do not form H-bonds with water

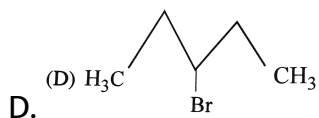
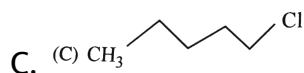
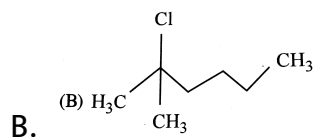
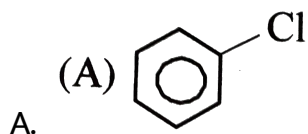
C. They are highly viscous

D. They are very strong C-X bond.

Answer: B

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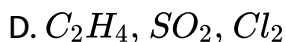
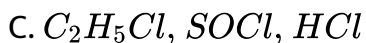
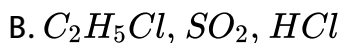
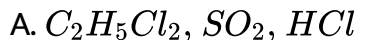
130. Which of the following shows S_{N1} reaction most readily ?



Answer: B

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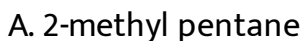
131. $C_2H_5OH + SOCl_2 \xrightarrow{\text{Pyridine}} x + y + z$, in the reaction x , y and z respectively are



Answer: B

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132. Chloropropane and isopropyl chloride with sodium in ether forms



B. Hexane

C. 3-methyl pentane

D. 4-methyl pentane

Answer: A



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133. Tertiary butyl chloride preferably undergo hydrolysis by:

A. S_{N1} mechanism

B. S_{N2} mechanism

C. Any of A or B

D. None of above

Answer: A



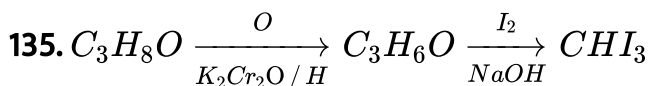
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134. The alkyl halide that undergoes S_N1 reaction more readily is

- A. ethyl bromide
- B. isopropylbromide
- C. n-butyl bromide
- D. t-butyl bromide

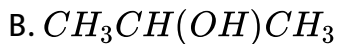
Answer: D

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The starting compound is

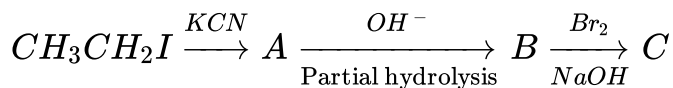
- A. $CH_3CH_2CH_2OH$



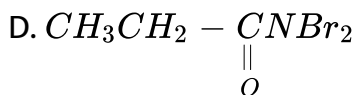
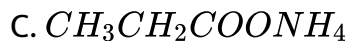
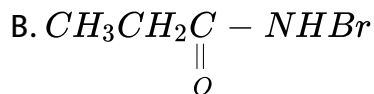
Answer: B

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136. Given the following sequence of reactions



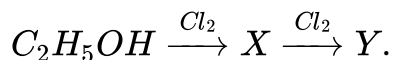
The major product (C) is



Answer: A

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137. What are X and Y in the following reaction sequence



- A. C_2H_5Cl , CH_3CHO
- B. CH_3CHO , CH_3CO_2H
- C. CH_3CHO , CCl_3CHO
- D. C_2H_5Cl , CCl_3CHO

Answer: C

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138. Consider the reaction



- A. It gives propionic acid on hydrolysis
- B. It has an ester function
- C. It has nitrogen linked to ethyl carbon
- D. It has a cyanide group.

Answer: D



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139. Hydrolysis of trichloromethane with aqueous KOH gives

- A. methanol
- B. acetic acid

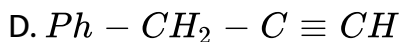
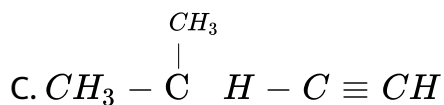
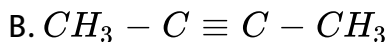
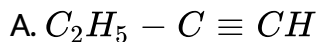
C. ethanol

D. formic acid

Answer: D

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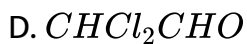
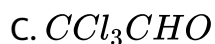
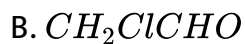
140. Which compound does not give precipitate with ammonical silver nitrate solution ?



Answer: B

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141. The formula of chloral is



Answer: C



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142. Reaction of methyl bromide with aqueous sodium hydroxide involves $\text{S}_{\text{N}}2$.

A. racemisation

B. S_N1 mechanism

C. inversion of configuration

D. S_N2 mechanism

Answer: D

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143. Formation of transition state is a characteristic of

A. electrophilic substitution reaction

B. S_N1 reaction

C. S_N2 reaction

D. free radical substitution

Answer: C

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144. Reaction between propene and HCl to form isopropyl chloride takes place through

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

Answer: B



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145. $CH_3CH_2CH_2Br \xrightarrow{alc. KOH} CH_3CH = CH_2 + HBr$ is an example of the

- A. Substitution reaction

- B. Addition reaction
- C. Elimination reaction
- D. electrophilic addition reaction

Answer: C

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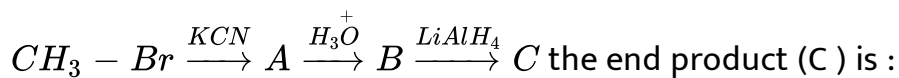
146. Iodoform can be prepared from all except

- A. ethyl methyl ketone
- B. isopropyl alcohol
- C. 3-methyl-2-butanone
- D. isobutyl alcohol

Answer: D

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147. In the following sequence of reactions:

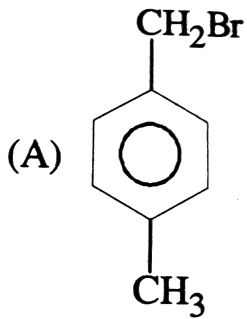


- A. Methane
- B. Acetaldehyde
- C. Ethyl alcohol
- D. acetone

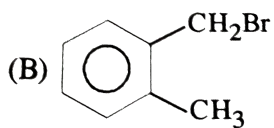
Answer: C

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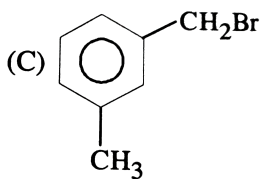
148. Compound (A) C_8H_9Br . Gives a white precipitate when warmed with alcoholic $AgNO_3$. Oxidation of (A) gives an acid (B). $C_8H_6O_4$. (B) easily forms anhydride on heating. Identify the compound (A)



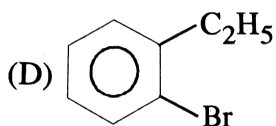
A.



B.



C.



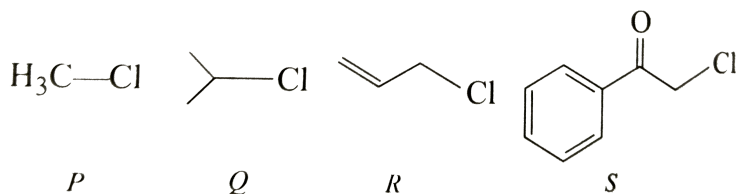
D.

Answer: B



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149. KI in acetone undergoes S_N2 reaction with each of P, Q, R, S. The rates of the reaction vary as :

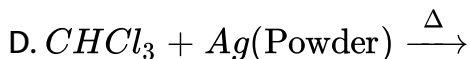
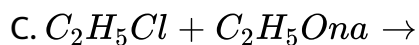
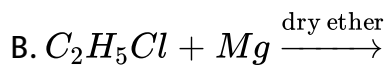


- A. P gt Q gt R S
- B. S gt P gt R gt Q
- C. P gt R gt Q gt S
- D. R gt P gt S gt Q

Answer: B

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150. Wurtz reaction of methyl iodide yields an organic compound X . Which one of the following reactions also yields X .



Answer: A



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151. Chlorobenzene is prepared commercially by

A. Friedal-Crafts's reaction

B. Rasching process

C. Grignard's reagent

D. Wurtz-Fitting reaction

Answer: B



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152. Phenol $\xrightarrow[\Delta]{Zn}$ X. The compound X on acylation gives aliphatic aromatic ketone. The reaction is :

- A. Gatterman's reaction
- B. Friedal-Craft's reaction
- C. Wurtz reaction
- D. None of these

Answer: B



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153. Which one of the following halogen compounds is difficult to be hydrolysed by S_N1 mechanism?

A. Tertiary butyl chloride

B. Isopropyl chloride

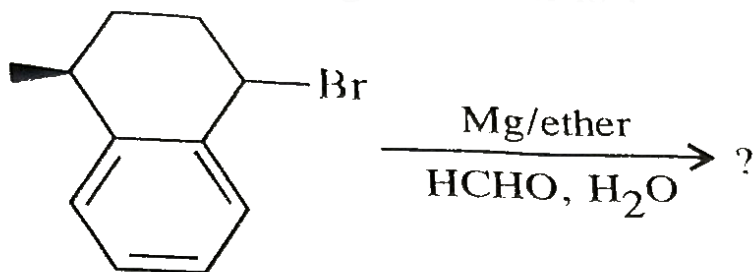
C. Benzyl chloride

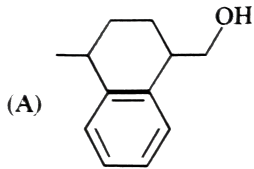
D. Chlorobenzene

Answer: D

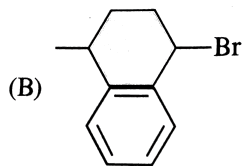
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154. The product in the following reaction is :

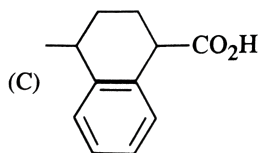




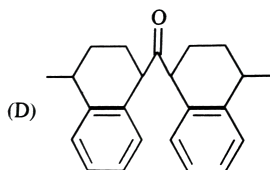
A.



B.



C.



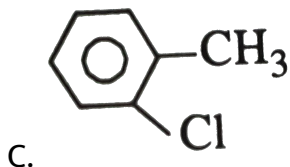
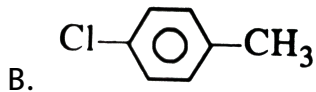
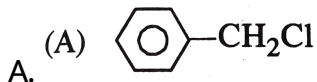
D.

Answer: A

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Selected Straight Objective Type MCQs

1. $C_7H_7Cl \xrightarrow[\text{(ii) Soda-lime/}\Delta]{\text{(i) } KMnO_4}$ Chlorobenzene. In this sequence, the starting compound can be



D. None of these

Answer: B::C

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2. $A \xrightarrow{I_2 / NaOH}$ Iodoform + Sod. Succinate In the above sequence A can be

A. Pentan-2-one

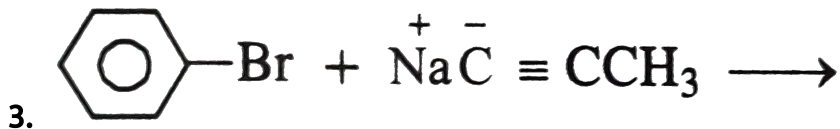
B. Acetophenone

C. 4-Ketopenone

D. Hexane-2,5-dione

Answer: C::D

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In the reaction the major product (s) formed is (are) ,

A. Propyne

B. Cyclohexane

C. 3-Cyclohexylpropyne

D. 2-Cyclohexylpropane

Answer: A::B

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4. Which of the following reagents/tests cannot be used to distinguish allyl bromide from n-propyl bromide

A. Br_2 / CCl_4

B. KOH followed by acidifying with HNO_3 and adding $AgNO_3$

(aq)

C. Lassaigne's test

D. Alkaline $KMnO_4$

Answer: B::C

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5. Which of the following substance on treatment with $NaNH_2$ in liquid NH_3 gives m-anisidine

- A. o-Bromoanisole
- B. m-Bromoanisole
- C. p-Bromoanisole
- D. None of these

Answer: A::B

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6. Only two isomeric monochloro derivatives are possible for

- A. n-Butane
- B. 2,4-Dimethylpentane

C. Benzene

D. 2-Methylpropane

Answer: A::D

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7. Dipole moment is shown by :

A. Benzoyl chloride

B. cis-1,2-Dichloroethene

C. trans-1,2-Dichloroethene

D. trans-1,2-Dichloro-2-pentene

Answer: A::B::D

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8. 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 stabilization
- C. Longer carbon-halogen bond
- D. sp^2 -Hybridized carbon attached to halogen.

Answer: B::D

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9. The compound(s) used as refrigerant are

- A. NH_3
- B. CCl_4
- C. CF_4

D. CF_2Cl_2

Answer: A::D

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10. The product of the reaction of alcoholic silver nitrite with ethyl bromide is:

A. Ethyne

B. Ethene

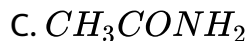
C. Nitroethane

D. Ethyl nitrite

Answer: C::D

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11. Which of the following ketone will not give yellow precipitate with $NaOH / I_2$?

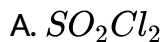


Answer: A:D



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12. Benzylchloride ($C_6H_5CH_2Cl$) can be prepared from toluene by chlorination with :



C. Cl_2

D. NaOCl

Answer: A::C



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13. Toluene when treated with Br_2/Fe , gives p-bromotoluene as the major product because the methyl group

A. is para directing

B. is m-directing

C. activates the ring by hyperconjugation

D. deactivates the ring

Answer: A::C



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14. Anti-Markownikoff's addition of HBr is not observed in-

A. Propene

B. 1-Butene

C. But-2-ene

D. Pent-2-ene

Answer: C

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

A. Benzoyl chloride

B. m-Chlorotoluene

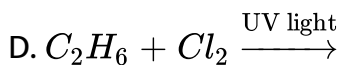
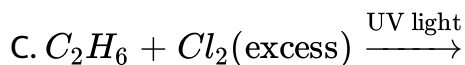
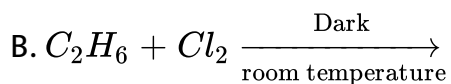
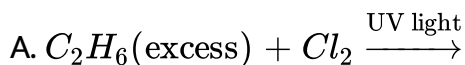
C. Benzyl chloride

D. o-and p-Chlorotoluene

Answer: D

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



Answer: A

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17. n-Propyl bromide on treatment with ethanolic potassium hydroxide produces :

A. Propane

B. Propene

C. Propyne

D. Propanol

Answer: B

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18. Of the following compounds, which will have a zero dipole moment ?

A. 1,1-Dichloroethylene

B. cis-1,2-Dichloroethylene

C. trans-1,2-Dichloroethylene

D. None of these compounds

Answer: C

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19. Which of the following will have least hindered rotation about carbon-carbon bond?

A. Ethane

B. Ethylene

C. Acetylene

D. Hexachloroethane

Answer: A

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20. The number of structural and configurational isomers of a bromo compound, C_5H_9Br , formed by the addition of HBr to 2-pentyne respectively, is:

- A. 1 and 2
- B. 2 and 4
- C. 4 and 2
- D. 2 and 1

Answer: B



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21. The $CI - C - CI$ angle in 1, 1, 2, 2, tetrachloroethane and tetrachloromethane respectively will be about:

A. 120° and $109^\circ.5^\circ$

B. 90° and $109^\circ.5^\circ$

C. 109.5° and 90°

D. $109^\circ.5$ and 120

Answer: A



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22. The C-H bond distance is the longest in:

A. C_2H_2

B. C_2H_4

C. C_2H_6

D. $C_2H_2Br_2$

Answer: C



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23. Chlorination of toluene in the presence of light and heat followed by treatment with aqueous $NaOH$ gives

- A. o-Cresol
- B. p-Cresol
- C. 2,4-Dihydroxytoluene
- D. Benzoic acid

Answer: D



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24. A mixture of 1-chlorobutane and 2-chlorobutane when treated with alcoholic KOH gives:

A. 1-Butene

B. 1-Butanol

C. 2-Butene

D. 2-Butanol

Answer: A



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25. Butanenitrile may be prepared by heating

A. Propyl alcohol with KCN

B. Butyl alcohol with KCN

C. Propyl chloride with KCN

D. Propyl chloride with KCN

Answer: D



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26. In the addition of HBr to propene in the absence of peroxides, the first step involves the addition of-



Answer: A



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27. Arrange the following compounds in order of increasing dipole moment .

Toluene (*I*) m-dichlorobenzene (*II*)

o-dichlorobenzene (*III*) . P-dichlorobenzene (*IV*) .

A. I lt IV lt II lt III

B. IV lt I lt II lt III

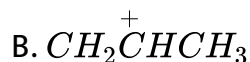
C. IV lt I lt III lt II

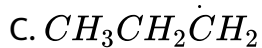
D. IV lt II lt I lt III

Answer: B

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28. The intermediate during the addition of HCl to propene in the presence of peroxide is :





Answer: B

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29. The number of possible enantiomer pairs that can be produced during monochlorination of 2 – methylbutane is :

A. 2

B. 3

C. 4

D. 1

Answer: A

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30. During debromination of meso-dibromobutane, the major compound formed is :

A. n-butane

B. 1-butane

C. cis-2-butene

D. trans-2-butene

Answer: D

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31. In the reaction of p-chlorotoluene with KNH_2 in liquid NH_3 , the major product is .

A. o-toluidine

B. m-toluidine

C. p-toluidine

D. p-chloroaniline

Answer: B

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32. $(CH_3)_3C-MgCl$ on reaction with D_2O produces

A. $(CH_3)_3CD$

B. $(CH_3)_3COD$

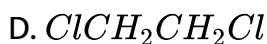
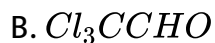
C. $(CD_3)_3CD$

D. $(CD_3)_3OD$

Answer: A

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33. Which of the following will react with water?



Answer: B

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34. A solution of (+)-2-chloro-2-phenyl ethane in toluene racemises slowly in the presence of small amount of $SbCl_5$, due to the formation of:

A. Carbanion

B. Carbene

C. Free-radical

D. Carbocation

Answer: D

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35. The order of reactivities of the following alkyl halides for a S_N2 reaction is :

A. $RF \gt RCl \gt RBr \gt RI$

B. $RF \gt RBr \gt RCl \gt RI$

C. $RCl \gt RBr \gt RF \gt RI$

D. $RI \gt RBr \gt RCl \gt RF$

Answer: D



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36. Which of the following has the highest nucleophilicity ?

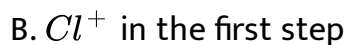
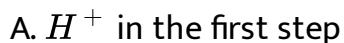


Answer: C



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37. The reaction of propene with HOCl proceeds via the addition of :



C. OH^- in the first step

D. Cl^+ and OH^- in a single step

Answer: B

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38. As S_N2 reaction at an asymmetric carbon of a compound always gives:

A. an enantiomer of the substrate

B. a product with opposite optical rotation

C. a mixture of diastereomers

D. a single stereoisomer

Answer: D

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39. The number of isomers for the compound with molecular formula $C_2BrClFI$ is

A. 3

B. 4

C. 5

D. 6

Answer: D

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40. In the presence of peroxide, hydrogen chloride and hydrogen iodide do not give anti-Markovnikov's addition to alkenes because:

A. both are highly ionic

B. one is oxidising and the other is reducing

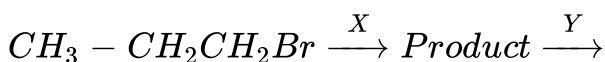
C. one of the steps is endothermic in both the cases

D. all the steps are exothermic in both the reactions

Answer: C

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



A. X = dilute aqueous $NaOH$, $20^{\circ}C$, Y = HBr/ acetic acid $20^{\circ}C$

B. X = concentrated alcoholic $NaOH$, $80^{\circ}C$, Y = HBr/acetic acid
 $20^{\circ}C$

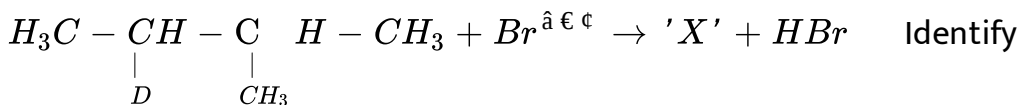
C. X = dilute aqueous $NaOH$, $20^{\circ}C$, Y = $Br_2/CHCl_3$, $0^{\circ}C$

D. X = concentrated alcoholic $NaOH$, $80^{\circ}C$, Y =
 $Br_2/CHCl_3$, $0^{\circ}C$

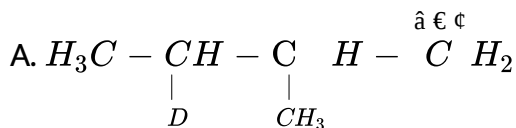
Answer: B

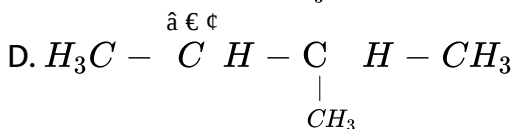
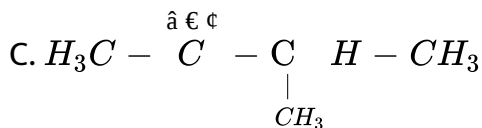
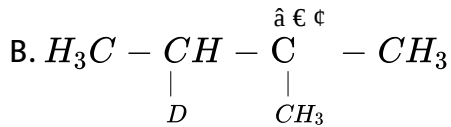
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42. Consider the following reaction :



the structure of the major product 'X'





Answer: B

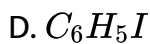
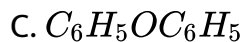
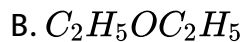
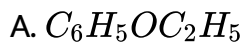
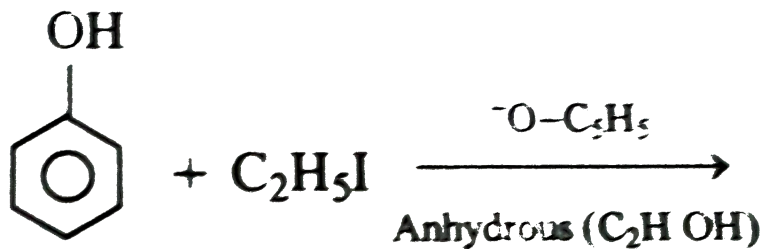
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43. Among the following, the molecule with the highest dipole moment is :



Answer: A

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Answer: A

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45. How many chiral compounds are possible on monochlorination of 2-Methyl butane ?

A. 2

B. 4

C. 6

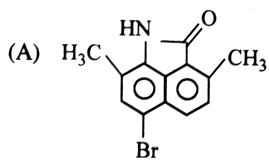
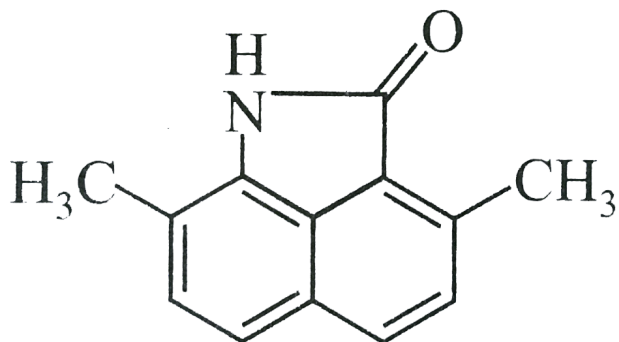
D. 8

Answer: B

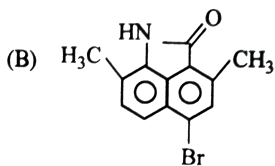


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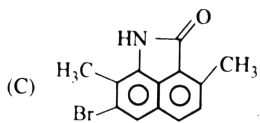
46. The major product obtained when Br_2/Fe is treated with



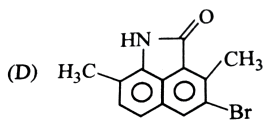
A.



B.



C.



D.

Answer: A

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47. How will you convert butan -2-one to propanoic acid?

A. Tollens's reagent

B. Fehling's solution

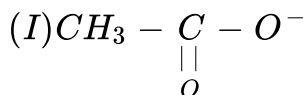
C. $NaOH / I_2 / H^+$

D. $NaOH / NaI / H^+$

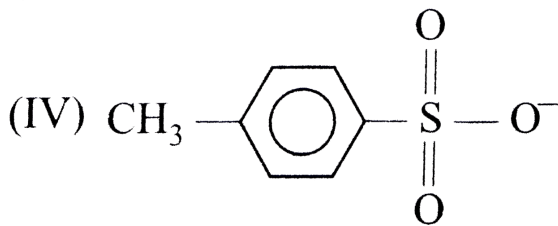
Answer: C

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48. The correct order of nucleophilicity among the following is:



(III) CN^-



(iv)

A. (1), (2), (3), (4)

B. (4), (3), (2), (1)

C. (2), (3), (1), (4)

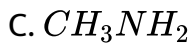
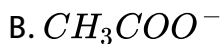
D. (3), (2), (1), (4)

Answer: D

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49. Among the following, the strongest nucleophile is:

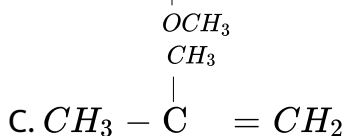
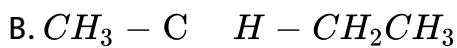
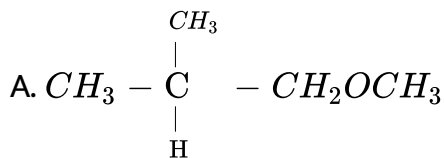
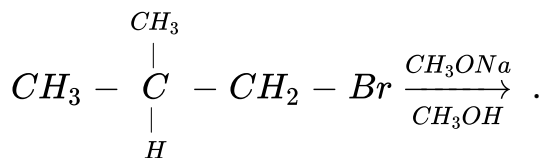
A. C_2H_5SH

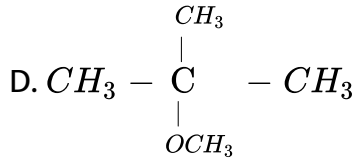


Answer: A

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50. The major product formed in the following reaction is

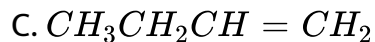
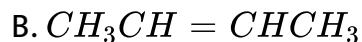




Answer: C

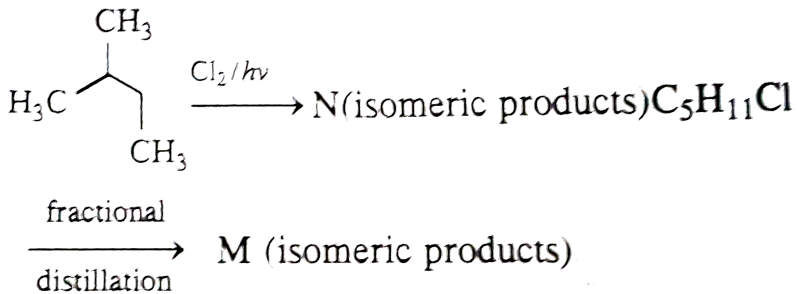
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51. The major product obtained on treatment of $CH_3CH_2CH(F)CH_3$ with CH_3O^- / CH_3OH is :



Answer: C

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52.

Given the number of N and M

A. 6, 6

B. 6, 4

C. 4, 4

D. 3, 3

Answer: B



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53. Which of the following sequence of reaction (reagents) can be used for conversion of $C_6H_5CH_2CH_3$ into $C_6H_5CH = CH_2$?

A. $SOCl_2, H_2O$

B. SO_2Cl_2 alc KOH

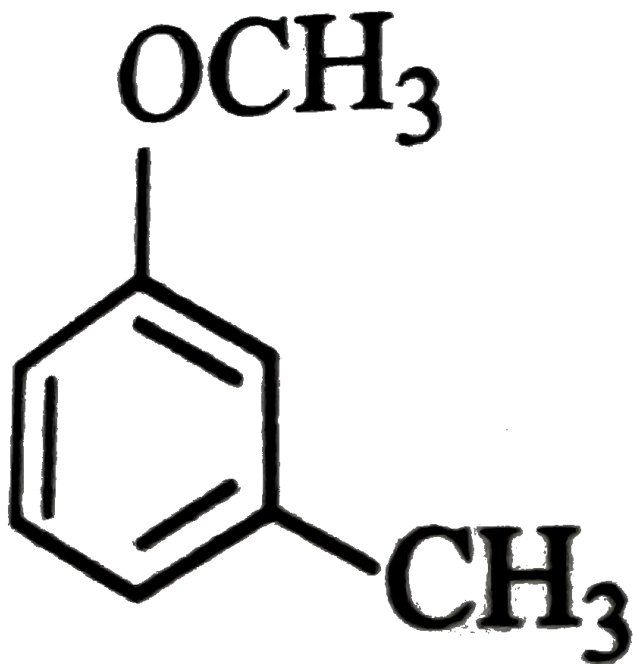
C. $Cl_2/h\nu, H_2O$

D. $COCl_2$, alc KOH

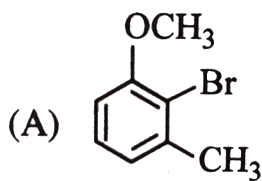
Answer: B

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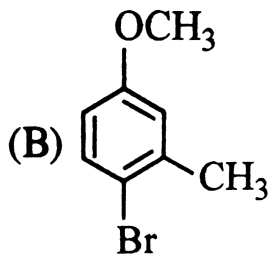
54. The major product obtained on monobromination (with $Br_2 / FeBr_3$) of the following compound A is



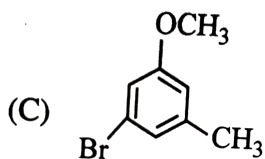
A



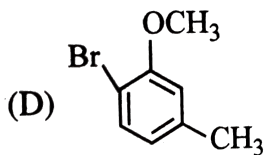
A.



B.



C.

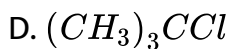
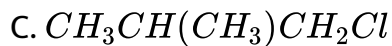
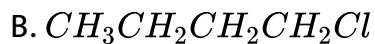


D.

Answer: B

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

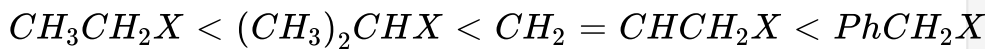


Answer: B

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56. The correct increasing order of the reactivity of halides for S_N1 reaction is:

A.



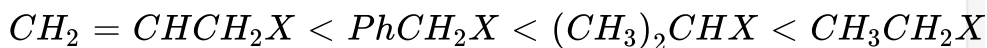
B.



C.



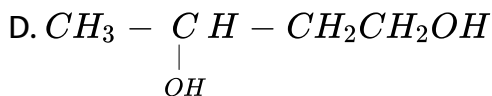
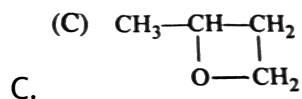
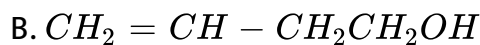
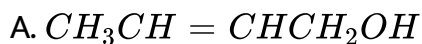
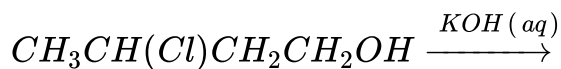
D.



Answer: A

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57. the major product in the following reaction is :



Answer: D

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58. HBr reacts with $CH_2 = CH - OCH_3$ under anhydrous conditions at room temperature to give:

- A. CH_3CHO and CH_3Br
- B. $BrCH_2CHO$ and CH_3OH
- C. $BrCH_2CH_2OCH_3$
- D. $CH_3 - CHBr - OCH_3$

Answer: D

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59. The IUPAC name of the compound shown below



- A. 2-bromo-6-chlorocyclohex-ene
- B. 6-bromo-2-chlorocyclo hexane

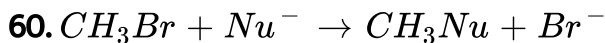
C. 3-bromo-1-chlorocyclo hexene

D. 1-bromo-3-chlorocyclo hexene

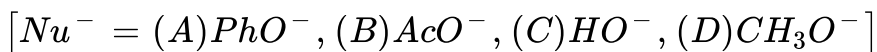
Answer: C



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The decreasing order of the rate of the above reaction with nucleophiles (Nu^-) A to D is :



A. D gt C gt A gt B

B. D gt C gt B gt A

C. A gt B gt C gt D

D. B gt D gt C gt A

Answer: B

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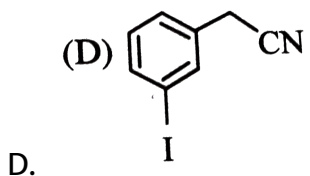
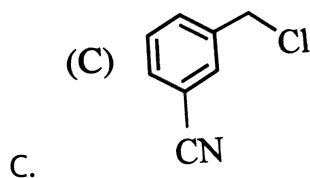
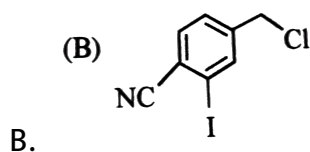
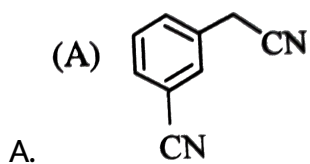
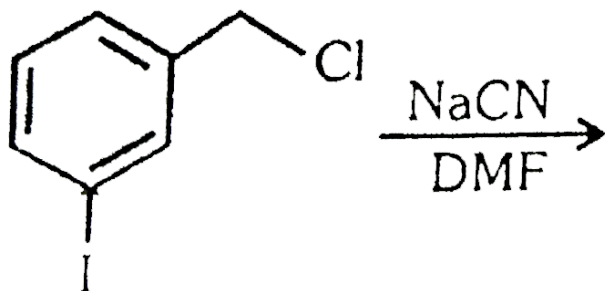
61. Fluorobenzene (C_6H_5F) can be synthesized in the laboratory .

- A. by heating phenol with HF and KF
- B. from aniline by diazotisation followed by heating the salt with BF_3 .
- C. by direct fluorination of benzene with F_2 gas
- D. by reacting bromobenzene with NaF solution

Answer: B

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62. The structure of the major product formed in the following reaction is:



Answer: D

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63. Trans-2-phenyl-1-bromocyclopentane on reaction with alcoholic KOH produces

- A. 4-phenylcyclopentane
- B. 2-phenylcyclopentene
- C. 1-phenylcyclopentene
- D. 3-phenylcyclopentene

Answer: D

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64. Which of the following is not chiral?

A. 2-Hydroxypropanoic acid

B. 2 butanol

C. 2, 3-Dibromobutane

D. 3-Bromopentane

Answer: D



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65. The number of stereoisomers obtained by bromination of trans-2-butene is :

A. 1

B. 2

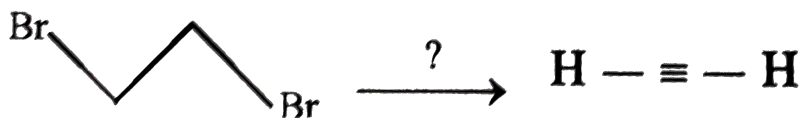
C. 3

D. 4

Answer: A

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66. The reagents for the following conversion is/are

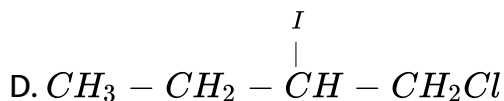
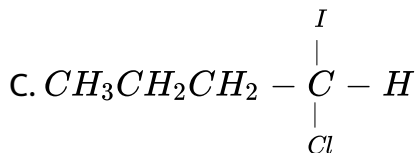
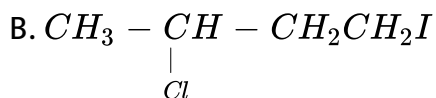
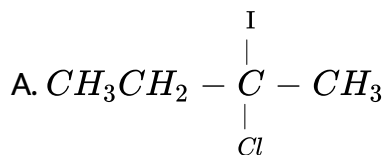
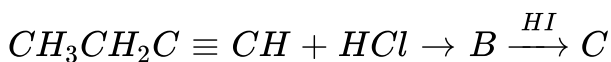


- A. alcoholic KOH
- B. alcoholic (2OH) followed by NaNH_2
- C. aqueous KOH followed by NaNH_2
- D. $\text{Zn} / \text{CH}_3\text{COOH}$

Answer: B

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67. Predict the product C obtained in the following reaction of butyne-1.

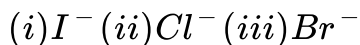


Answer: A



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68. For the following



the increasing order of nucleophilicity would be:



Answer: C

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69. The reaction of toluene with Cl_2 in presence of $FeCl_3$ gives predominantly

A. m-Chlorotoluene

B. benzoyl chloride

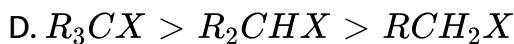
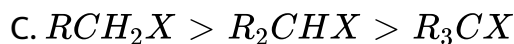
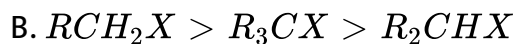
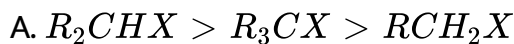
C. benzyl chloride

D. o-and p-Chlorotoluene

Answer: D

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70. Which of the following is the correct order of decreasing S_N2 reactivity ?



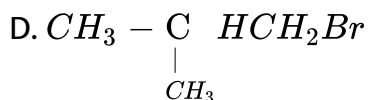
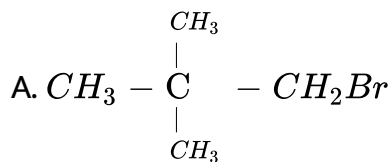
Answer: C

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71. In a S_N2 substitution reaction of the type

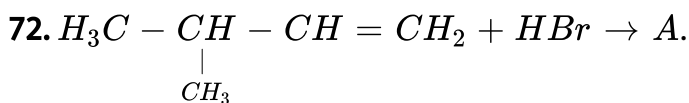


which one of the following has the highest relative rate?

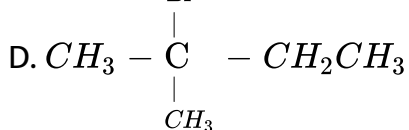
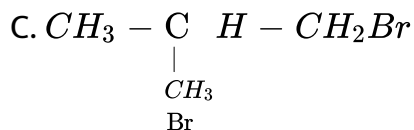
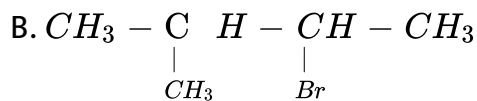
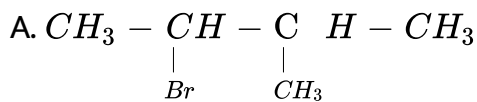


Answer: B

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A is predominantly



Answer: D

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73. How many stereoisomers does this molecule have?



A. 8

B. 2

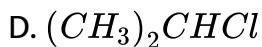
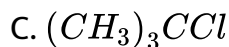
C. 5

D. 6

Answer: C

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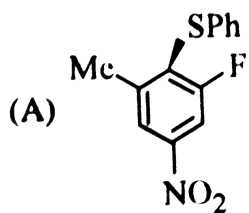
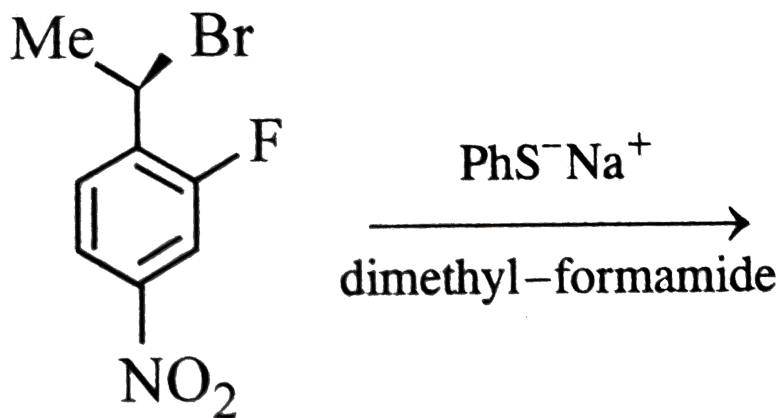
74. The organic chloro compound, which shows complete stereochemical inversion during a S_N^2 reaction, is:



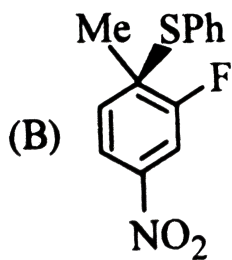
Answer: A

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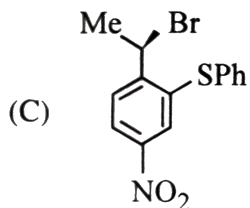
75. The major product of the following reaction is



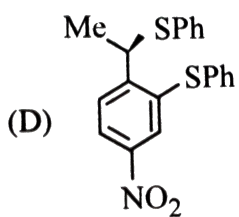
A.



B.



C.

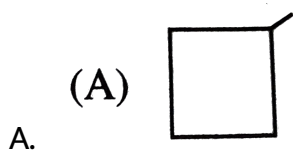


D.

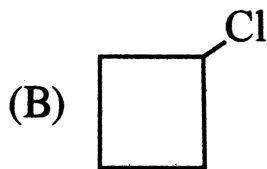
Answer: A

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76. What would be the product formed when 1-bromo-3-chlorocyclobutane reacts with two equivalents of metallic sodium in ether ? .

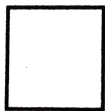


A.



B.

(C)



C.

(D)



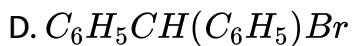
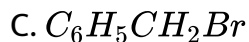
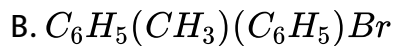
D.

Answer: D



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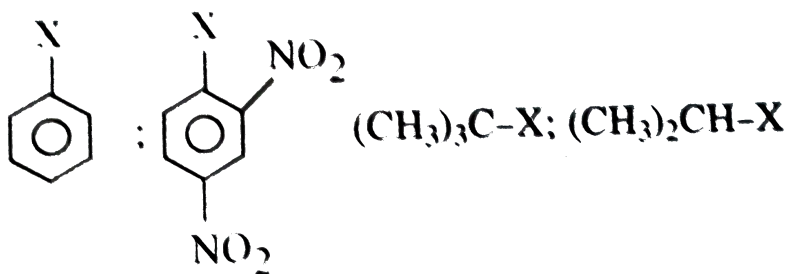
77. Which one is most reactive towards S_N1 reaction?



Answer: B

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78. The correct order of increasing reactivity of C-X bond towards nucleophile in the following compounds is :



A. II lt III lt I lt IV

B. IV lt III lt I lt II

C. III lt II lt I lt IV

D. I lt II lt IV lt III

Answer: D

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1. In both alkyl halides, the halogen atom is attached directly to the carbon atoms. They are expected to exhibit similar reactivity. However, aryl halides are comparatively little reactive, particularly towards nucleophilic substitution reactions. For example, hydrolysis of ethyl chloride takes place by simple boiling with aqueous KOH. On the other hand, the alkaline hydrolysis of chlorobenzene needs a very high temperature (623 K) as well as very high pressure

Among the following, which has the weakest C-X bond

- A. benzyl bromide
- B. Bromobenzene
- C. Vinyl bromide
- D. ethyl bromide

Answer: A

2. In both alkyl halides, the halogen atom is attached directly to the carbon atoms. They are expected to exhibit similar reactivity. However, aryl halides are comparatively little reactive, particularly towards nucleophilic substitution reactions. For example, hydrolysis of ethyl chloride takes place by simple boiling with aqueous KOH. On the other hand, the alkaline hydrolysis of chlorobenzene needs a very high temperature (623 K) as well as very high pressure.

The halide which does not give any precipitate when warmed with alcoholic $AgNO_3$ solution is

- A. Chloro benzene
- B. Benzyl chloride
- C. Allyl chloride
- D. Tert butyl chloride

Answer: A

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3. In both alkyl halides, the halogen atom is attached directly to the carbon atoms. They are expected to exhibit similar reactivity. However, aryl halides are comparatively little reactive, particularly towards nucleophilic substitution reactions. For example, hydrolysis of ethyl chloride takes place by simple boiling with aqueous KOH. On the other hand, the alkaline hydrolysis of chlorobenzene needs a very high temperature (623 K) as well as very high pressure. Benzene reacts with Cl_2 in the presence of $FeCl_3$ (and absence of sunlight) to form

- A. Benzyl chloride
- B. Benzal chloride
- C. Chloro benzene

D. Benzene hexachloride

Answer: C

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4. In both alkyl halides, The halogen atom is attached directly to the carbon atoms. They are expected to exhibit similar reactivity. However, aryl halides are comparatively little reactive, particularly towards nucleophilic substitution reactions. For example, hydrolysis of ethyl chloride takes place by simple boiling with aqueous KOH. On the other hand, the alkaline hydrolysis of chlorobenzene needs a very high temperature (623 K) as well as very high pressure. Friedel craft reaction of bromo benzene with methyl iodide gives

A. o-Bromotoluene

B. p-Bromotoluene

C. o and p-Bromotoluene

D. m-Bromotoluene

Answer: C



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5. An alkyl halide with β -hydrogen atoms on reaction with a base or a nucleophile has two competing paths. Substitutions (S_{N1} and S_{N2}) and elimination (E_1 and E_2). The path adopted by them depends upon the nature of the alkyl halide, strength and size of the base/nucleophile and reaction conditions. The bulkier nucleophile prefers to act as a base and abstracts a proton rather than approaching a tetravalent carbon atom (due to steric reasons) and vice versa. A primary alkyl halide can react by any of the four mechanisms (S_{N2} , S_{N1} , E_2 and E_1) depending upon the stability of the intermediate carbocation or the substituted alkene formed and

the reaction conditions and tertiary alkyl halide. The three possible paths (S_{N1} , E_1 and E_2)

2-Bromopropane is separately heated with aq CH_3CO_2Na or with CH_3CH_2ONa / CH_3CH_2OH . The major product obtained in each case respectively are

- A. Isopropyl acetate, propene
- B. Propane, isopropylethyl ether
- C. Isopropyl acetate, isopropyl ethyl ether
- D. Propene in both the case

Answer: D



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6. An alkyl halide with β -hydrogen atoms on reaction with a base or a nucleophile has two competing paths. Substitutions (S_{N1} and S_{N2})

) and elimination (E_1 and E_2). The path adopted by them depends upon the nature of the alkyl halide, strength and size of the base/nucleophile and reaction conditions. The bulkier nucleophile prefers to act as a base and abstracts a proton rather than approaching a tetravalent carbon atom (due to steric reasons) and vice versa. A primary alkyl halide can react by any of the four mechanisms (S_{N2} , S_{N1} , E_2 and E_1) depending upon the stability of the intermediate carbocation or the substituted alkene formed and the reaction conditions and tertiary alkyl halide. The three possible paths (S_{N1} , E_1 and E_2)

2-Bromopentane is heated with potassium ethoxide in ethanol. The major product obtained is

- A. 2-Ethoxypentane
- B. Pentene
- C. cis-Pentene-2
- D. trans-Pentene-2

Answer: A

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7. An alkyl halide with β -hydrogen atoms on reaction with a base or a nucleophile has two competing paths. Substitutions (S_{N1} and S_{N2}) and elimination (E_1 and E_2). The path adopted by them depends upon the nature of the alkyl halide, strength and size of the base/nucleophile and reaction conditions. The bulkier nucleophile prefers to act as a base and abstracts a proton rather than approaching a tetravalent carbon atom (due to steric reasons) and vice versa. A primary alkyl halide can react by any of the four mechanisms (S_{N2} , S_{N1} , E_2 and E_1) depending upon the stability of the intermediate carbocation or the substituted alkene formed and the reaction conditions and tertiary alkyl halide. The three possible paths (S_{N1} , E_1 and E_2)

Isopropyl bromide on heating with a concentrated solution of alcoholic (ethanolic) KOH predominantly gives

- A. Propene
- B. Propan-2-ol
- C. Propan-1-ol
- D. Isopropyl ethyl ether

Answer: C



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8. An alkyl halide with β -hydrogen atoms on reaction with a base or a nucleophile has two competing paths. Substitutions (S_{N1} and S_{N2}) and elimination (E_1 and E_2). The path adopted by them depends upon the nature of the alkyl halide, strength and size of the base/nucleophile and reaction conditions. The bulkier nucleophile

prefers to act as a base and abstracts a proton rather than approaching a tetravalent carbon atom (due to steric reasons) and vice versa. A primary alkyl halide can react by any of the four mechanism (S_{N2} , S_{N1} , E_2 and E_1) depending upon the stability of the intermediate carbocation or the substituted alkene formed and the reaction conditions and tertiary alkyl halide. The three possible paths (S_{N1} , E_1 and E_2)

Neopentyl bromide undergoes dehydrohalogenations to give alkene though it has no β -hydrogen. This is due

- A. E_2 mechanism
- B. E_1 mechanism
- C. due to rearrangement of carbocation by E_1 mechanism
- D. Hofmann elimination

Answer: A



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Matrix Match Type MCQs

1. Match the following columns

Column I	Column II
(A) S_N^1 mechanism	(p) Carbocation
(B) S_N^1 mechanism	(q) Steric hindrance
(C) Cyanide ion	(r) Nucleophilic substitution
(D) Nitrite ion	(s) Ambident nucleophile

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Column I	Column II
(A) Reactions are concentrated	(p) S_N^1
(B) CHX_3 cannot react	(q) S_N^2
(C) Reactions are stereospecific	(r) E_1
(D) R-I reacts faster than R-Cl	(s) E_2

2.

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REASON ASSERTION TYPE MCQs

1. Assertion (A) : The nucleophilic substitution of vinylchloride is difficult as compared to ethyl chloride.

Reason (R) : The vinyl group is electron donating in vinyl chloride.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is false
- D. A is false but R is true

Answer: C

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2. Assertion (A) : A white precipitate is obtained on addition of silver nitrate to sodium chloride solution, no such precipitate is obtained on addition of silver nitrate to methyl chloride.

Reason (R) : Silver nitrate is an compound.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true
- D. A is false but R is true

Answer: B

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3. Assertion (A) : Vinyl chloride can be differentiated from ethyl chloride by alcoholic $AgNO_3$ solution.

Reason (R) : Chlorine atom in ethyl chloride is inert while it is labile in vinyl chloride.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true

D. A is false but R is true

Answer: C

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4. Assertion (A) : Silver nitrite gives nitro alkene when it reacts with an alkyl halide.

Reason (R) : Silver nitrite is an ionic compound.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true
- D. A is false but R is true

Answer: C

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5. Assertion (A) : Neopentyl chloride undergoes S_{N2} reaction easily.

Reason (R) : Neopentyl chloride a primary halide.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true
- D. A is false but R is true

Answer: D

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6. Assertion: p-Dichlorobenzene is less soluble in organic solvents than the corresponding o-isomer

Reason o-Dichlorobenzene is polar while p-dichlorobenzene is non-polar .

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true
- D. A is false but R is true

Answer: B

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7. Assertion (A) : Alkyl halides are not soluble in water.

Reason (R) : Although polar in nature, yet alkyl halide are not able to form H-bonds with water molecules.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true

D. A is false but R is true

Answer: A

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8. Assertion (A) : 2, 3, 4-Trichloropentane can exhibit optical isomerism.

Reason (R) : 2, 3, 4- Trichloropentane has three chiral C atom in its molecule.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true
- D. A is false but R is true

Answer: C



9. Assertion (A) : Chloral is not alkyl halide.

Reason (R) Chloral molecule contains two OH groups linked to same C atom.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true
- D. A is false but R is true

Answer: B

10. Assertion (A) : The reaction of vinyl chloride and hydro-iodic acid produces 1-chloro-1-iodoethane.

Reason (R) : HI adds on vinyl chloride against Markownikoff's rule.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true
- D. A is false but R is true

Answer: A

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11. Assertion (A) : Chloroform is generally stored in brown bottles which are filled to brims.

Reason (R) : Chloroform reacts with glass in the presence of sunlight.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is true

D. A is false but R is true

Answer: C



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12. Assertion (A) : Chlorobenzene is easily hydrolysed as compared to chloroethane.

Reason (R) : Carbon-chlorine bond in chlorobenzene is relatively shorter than in chloroethane.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is true

D. A is false but R is true

Answer: D

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13. Assertion (A) : Carbon tetrachloride is used as fire extinguisher.

Reason (R) : Carbon tetrachloride is a non polar substance.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true
- D. A is false but R is true

Answer: B

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14. Assertion (A) : C_2H_5Br and alcoholic silver nitrite react to give nitroethane as a major product.

Reason (R) : NO_2^- is an ambident nucleophile.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true
- D. A is false but R is true

Answer: B

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15. Assertion (A) : Methyl chloride can give methane as well as ethane separately.

Reason (R) : Wurtz reaction proceeds through free radical mechanism.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true
- D. A is false but R is true

Answer: B

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16. Assertion (A) : Ethylidene chloride on treatment with aqueous KOH yield ethanal.

Reason (R) : Ethylene dichloride is a Gemdihalide.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true

D. A is false but R is true

Answer: C

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17. Assertion (A) : ROH does not react with NaBr.

Reaction (R) : Br^- is an extremely weak Bronsted base and cannot displace strong base OH^- .

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true
- D. A is false but R is true

Answer: A

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18. Assertion (A) : RCl is hydrolysed to ROH slowly but reaction is rapid if catalytic amounts of KI are added to the reaction mixture.

Reaction (R) : I^- is a powerful nucleophile which reacts rapidly with RCl to form RI. I^- is a better leaving group than Cl^- and RI is hydrolysed rapidly to ROH.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true
- D. A is false but R is true

Answer: A



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19. Assertion (A) : 1, 4-dichlorobenzene has higher melting point than that ethyl chloride.

Reason (R) : 1, 4-Dichlorobenzene is more symmetrical than 1, 2-dichlorobenzene.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true
- D. A is false but R is true

Answer: A

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20. Assertion (A) : The boiling point of ethyl bromide is higher than that of ethyl chloride.

Reason (R) : The molecular mass of ethyl bromide is higher than that of ethyl chloride.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not a correct explanation of A
- C. A is true but R is true
- D. A is false but R is true

Answer: A

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21. Assertion (A) : Tertiary alkyl halides are more reactive than 1° alkyl halides towards elimination.

Reason (R) : Positive Inductive effect of alkyl groups weakens carbon-halogen bond in 3° halides.

- A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is true

D. A is false but R is true

Answer: A

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22. (A) 2- Bromobutane on reaction with sodium ethoxide in ethanol gives 1-butene as a major product.

(R) 1-Butene is less stable than 2-butene.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is true

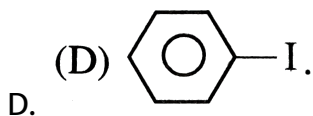
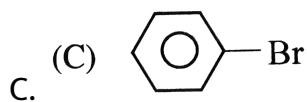
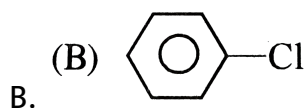
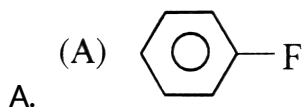
D. A is false but R is true

Answer: A

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ULTIMATE PREPARATORY PACKAGE

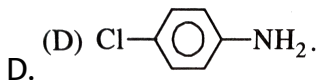
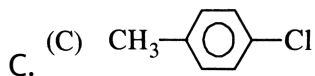
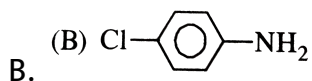
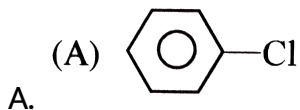
1. Which of the following aryl halides will react fastest with aq. NaOH at high temperature and high pressure ?



Answer: A

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2. Which of the following aryl halides will react fastest with aq. NaOH at high temperature and high pressure ?



Answer: B

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3. The halogen that best delocalizes the electron density to the benzene ring is

A. F

B. Cl

C. Br

D. I

Answer: A

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4. Which of the following alkyl/aryl halide will react fastest with alc. $AgNO_3$ at room temperature ?

A. bromobenzene

B. Carbon tetrachloride

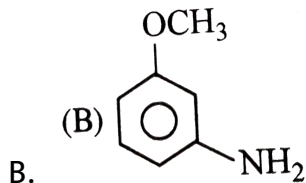
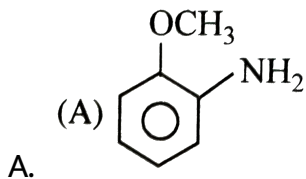
C. Benzyl bromide

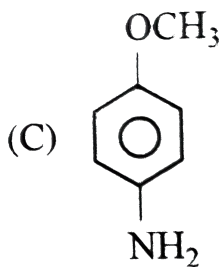
D. n-Hexyl chloride

Answer: C

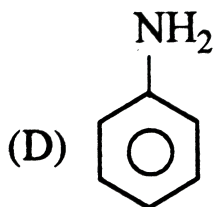
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5. When o-bromoanisole is treated with $NaNH_2 / liq. NH_3$, the main product obtained is





C.



D.

Answer: B

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6. Neopentyl alcohol on treatment with HCl and anhydrous $ZnCl_2$ gives

A. 2-Chloro-3-methylbutane

B. 2-Chloro-2-methylbutane

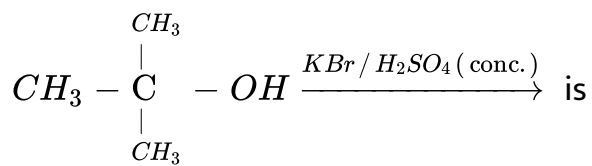
C. 1-Chloro-2,2-dimethylpropane

D. None of these

Answer: B

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7. The main organic product of the reaction



A. tert-Butyl bromide

B. Isobutyl bromide

C. 2-Methylbutane

D. None of these

Answer: A

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8. The main organic product of the reaction of neopentyl bromide with aqueous NaOH is

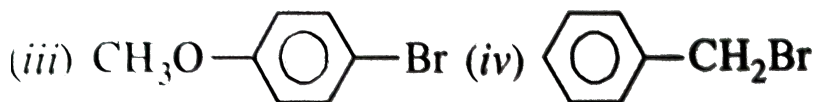
- A. Neopentyl alcohol
- B. Isobutyl alcohol
- C. 3-Methylbutan-2-ol
- D. 2-Methylbutan-2-ol

Answer: D

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9. The correct order of reactivity of following compounds in nucleophilic substitution reaction is

(i) CH_3Br (ii) CH_3Cl



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

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

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

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

Answer: C

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10. Out of the following the one having highest dipole moment is

A. $CHCl_3$

B. CCl_3

C. CH_3Cl

D. CH_2Cl_2

Answer: C

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11. S_N2 reaction are

A. stereoselective as well as atereospecific

B. stereoselective but not stereospecific

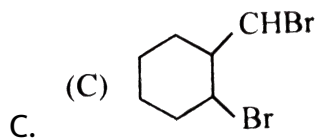
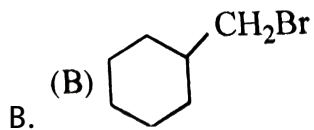
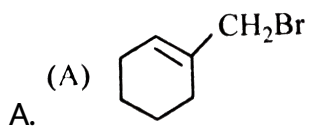
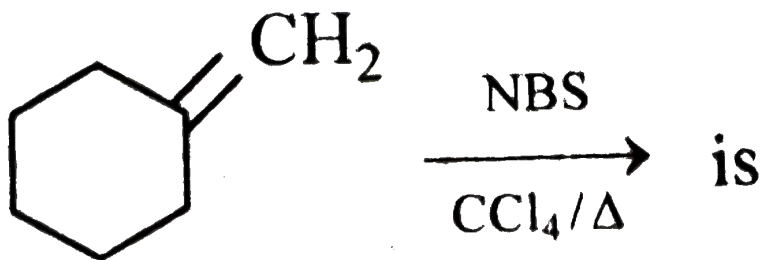
C. stereospecific but not stereoselective

D. Neither stereospecific nor stereoselective

Answer: A

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12. The major organic product formed in the reaction



D. None of these

Answer: A

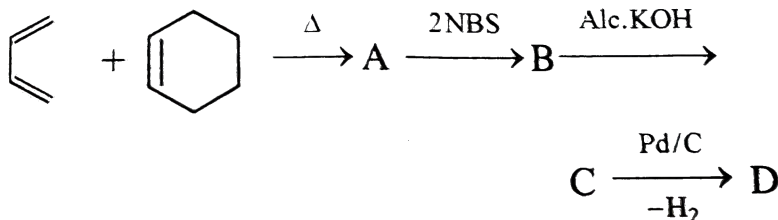
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13. Ethyl bromide and bromocyclohexane are treated separately with ammonia, the products formed respectively are

- A. Ethylamine and cyclohexylamine
- B. Ethene and cyclohexylamine
- C. Ethylamine and cyclohexene
- D. Ethene and cyclohexene

Answer: C

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The end product D formed in this sequence of reactions is

- A. Benzene

B. Decalin

C. Naphthalene

D. Tetralin

Answer: C



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15. In the reaction of p-chlorotoluene with KNH_2 in liquid NH_3 the major product is .

A. p-Chloroaniline

B. o-Toluidine

C. m-Toluidine

D. p-Toluidine

Answer: C



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16. When 1, 3-dichloropropane is treated with Zn and NaI, the major organic product formed is

- A. Propane
- B. Cyclopropane
- C. Propene
- D. n-Propyl iodide.

Answer: B



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17. An S_N2 reaction at an asymmetric carbon of a dextro-alkyl halide always gives

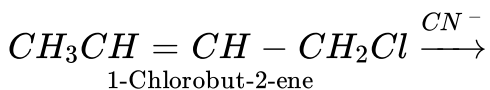
- A. a laevo product
- B. a racemic mixture
- C. a single optically active isomer
- D. None of these

Answer: C



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18. In the reaction



the organic product/product formed are

- A. $\text{CH}_3\text{CH} = \text{CH} - \text{CH}_2\text{CN}$
- B. $\text{CH}_3\text{CH}(\text{CN})\text{CH} = \text{CH}_2$
- C. Both A and B

D. None of these

Answer: C

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19. The decreasing order of reactivity of tert-butyl bromide (I), sec-butyl bromide (II) and n-butyl bromide (III) with alcoholic $AgNO_3$ is

A. I gt II gt III

B. III gt II gt I

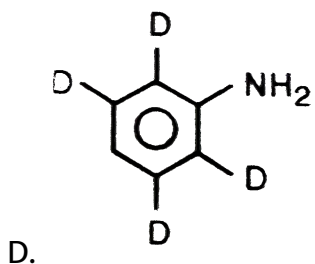
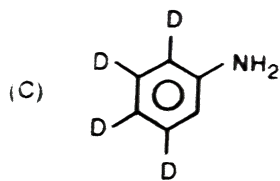
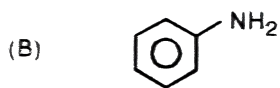
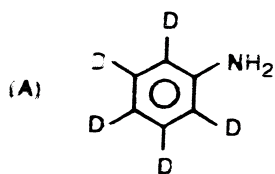
C. II gt III gt I

D. I gt III gt II

Answer: A

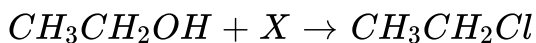
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20. When C_6D_5Br reacts with $NaNH_2/liq. NH_3$, the product obtained is

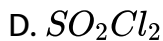


Answer: C

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The compound X is



Answer: A



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22. Which of the following alkyl halide undergoes a nucleophilic substitution reaction via formation of a carbocation ?



B. 2-Chloro-2-methylpropane

C. 2-Chlorobutane

D. 1-Chloro-3,3-dimethylpentane

Answer: B

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23. When normal propyl chloride is heated at 575 K it forms

A. Propane

B. 2-Chloropropane

C. Propyne

D. Propylene

Answer: B

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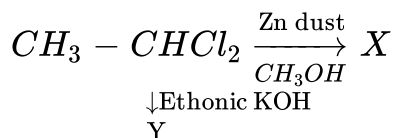
24. Which of the following is the expected product when neopentyl chloride reacts with anhydrous aluminium chloride at 415 K ?

- A. Neopentyl alcohol
- B. 2-Chloro-2-methylbutane
- C. 2-Chloro-2-methylpropane
- D. 2-Chloro-3-methylbutane

Answer: B

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25. The compounds X and Y in the following reaction are



- A. X Y
 $CH_3 - CH_3$ $CH_2 = CHCl$
- B. X Y
 $CH_2 = CH_2$ $CH_2 = CHCl$
- C. X Y
 $CH_2 = CH_2$ $CH \equiv CH$
- D. X Y
 $CH_2 = CH_2$ $CH_2 = CH_2$

Answer: C

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26. Which of the following is the major product when tert-butyl chloride is treated with potassium cyanide in aqueous ethanolic solution ?

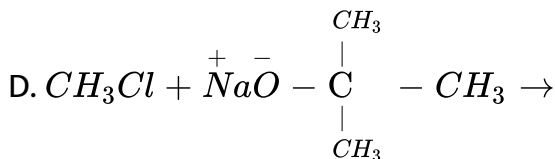
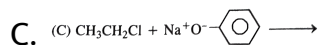
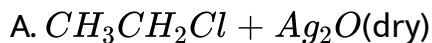
- A. tert-Butyl cyanide
- B. tert-Butyl isocyanide
- C. tert-Butyl ether

D. Iso-butene

Answer: D

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27. Which of the following reaction will not give ether as a major product ?



Answer: B

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28. Each of the following compound gives a white ppt. when boiled with alcoholic silver nitrate except

- A. vinyl chloride
- B. methyl chloride
- C. benzy chloride
- D. allyl chloride

Answer: A

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29. Which of the following products is obtained when chloroform in ethanolic solution ?

- A. Methane
- B. methyl chloride

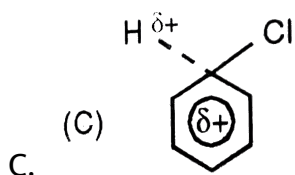
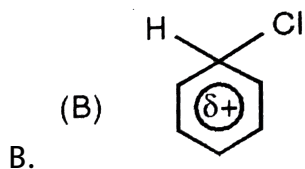
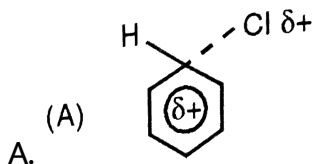
C. CCl_4

D. Methylene dichloride

Answer: D

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30. Which of the following is the most stable intermediate obtained in chlorination of benzene using Cl_2 and $FeCl_3$ as catalyst ?

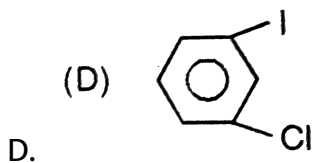
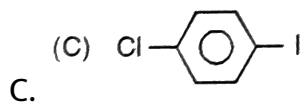
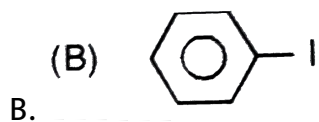
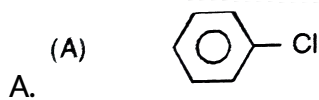
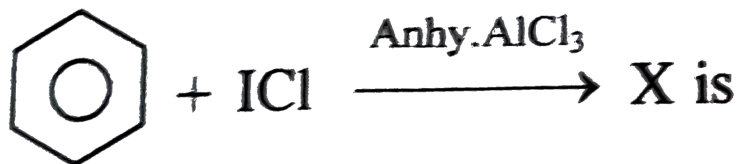


D. All are equally stable

Answer: B

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31. The compound X in the reaction



Answer: B

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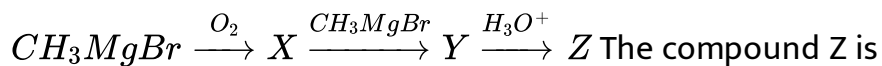
32. In their nucleophilic substitution reactions, aryl halide resembles

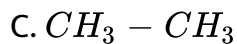
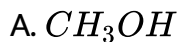
- A. vinyl chloride
- B. Allyl chloride
- C. benzyl chloride
- D. Ethyl chloride

Answer: A

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33. Given that



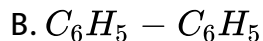
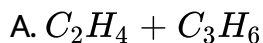


Answer: A



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34. Which of the following products is formed when benzene vapour is passed through a red hot tube at $600 - 800^\circ C$?

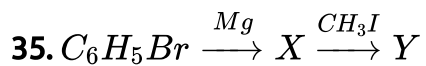


C. Cyclobutadiene

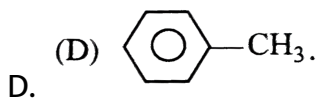
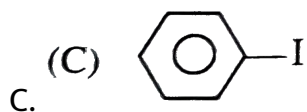
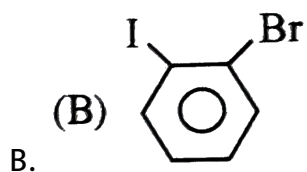
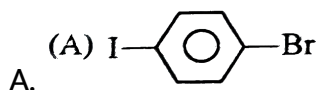
D. Cyclohexane

Answer: B

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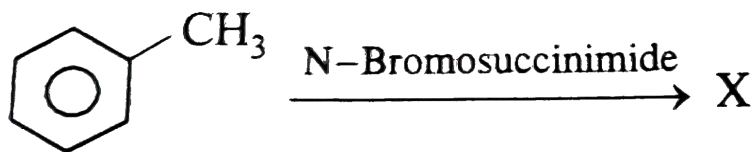


The product Y is



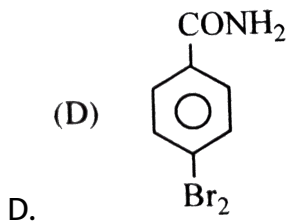
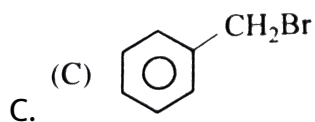
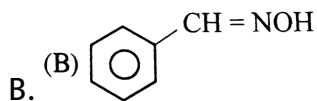
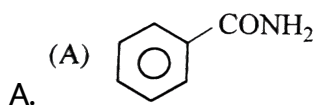
Answer: D

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36. The product X is

The product X is



Answer: C

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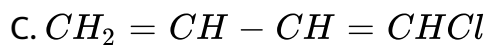
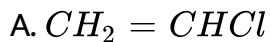
37. A chloro derivative (A) on treatment with zinc - copper couple gives a hydrocarbon with five C atoms. When 'A' is dissolved in ether and treated with sodium, 2,2,5,5-tetramethyl hexane is obtained. What is the original compound 'A' ?

- A. 3-chloro-2,2-dimethylpropane
- B. 1-Chloropropane
- C. 1-Chloro-2,2-dimethylpropane
- D. 1-chloro-2-methylbutane

Answer: C

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38. Dipole moment is maximum for



Answer: D



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39. The formation of $CH_3CH = CHCH_2Br$ on treatment of 1-butene with NBS (N-Bromosuccinimide) is an example of

A. Hoffmann rearrangement

B. 1,3 Shift

C. Allylic rearrangement

D. α -Chlorination

Answer: C

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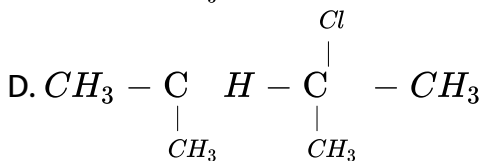
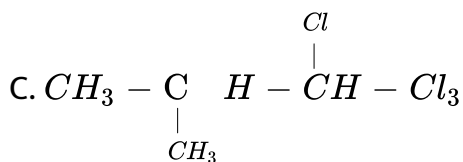
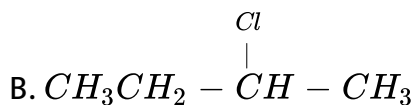
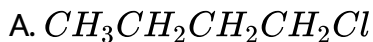
40. The hydrolysis of 2-bromo-3-methylbutane by S_{N1} mechanism gives mainly:

- A. 2-methyl-2-butanol
- B. 3-methyl-2-butanol
- C. 2-methyl-2-butene
- D. None of the above

Answer: A

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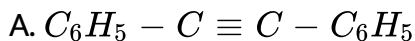
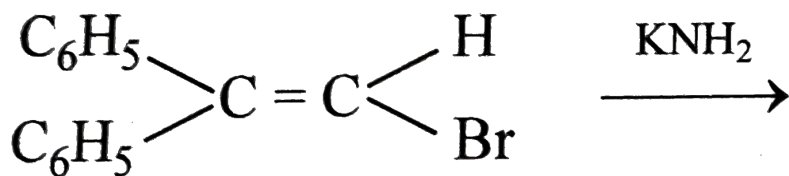
41. The rate of dehydrohalogenation is more for the alkyl halide

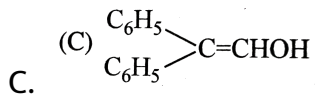
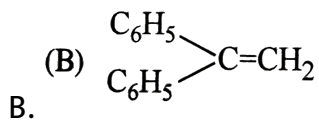


Answer: D

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42. The final product for the reaction





D. None of the above

Answer: A

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43. Acetylene is treated with excess HBr and the resulting compound is then heated with zinc duct. The final product will be

A. Ethylene

B. Acetylene

C. 1-Butene

D. 2-Butene

Answer: D

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BRAIN TEASERS - 9

1. The most stable arrangement of double bonds in a polynuclear compound is the one in which the maximum number of rings possess benzenoid structure. This rule is called as

- A. Huckel's Rule
- B. Fries Rule
- C. Dulong Pentit's Rule
- D. Dulong Petit's Rule

Answer: B

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2. The formal charge on oxygen atom in HOCl is

A. 0

B. +1

C. -2

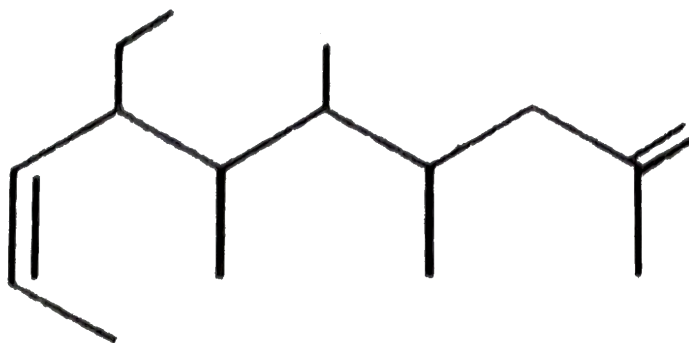
D. +2

Answer: A



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3. The IUPAC name of



A. 2,4,5,6-Tetramethyl-7-ethyldeca-1,7-diene

B. 7-Ethyl-2,4,5,6-tetramethyldeca-1,8-diene

C. 4-Ethyl-5,6,7,9-tetramethyldeca-2,9-diene

D. None of the above

Answer: B

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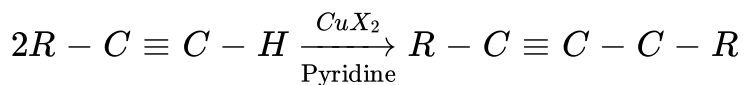
4. A mixture of camphor and benzoic acid can be separated by

- A. Sublimation
- B. Chemical methods
- C. Fractional crystallisation
- D. Extraction with solvent

Answer: B

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5. The following reaction is called



- A. Glaser reaction
- B. Eglinton's reaction
- C. Gomberg Beckmann reaction
- D. Leuckart reaction

Answer: B

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6. The technique of gas liquid chromatography is suitable for compounds which are:

- A. Liquids
- B. Highly volatile
- C. Soluble in water
- D. Vapourise ith decomposition

Answer: D

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7. The IUPAC name of $\begin{array}{c} \text{CH}_2 \\ | \\ \text{CN} \end{array} - \begin{array}{c} \text{CH} \\ | \\ \text{CN} \end{array} - \begin{array}{c} \text{CH}_2 \\ | \\ \text{CN} \end{array}$ is:

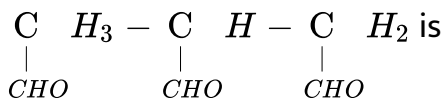
- A. 1,2,3-Propanetrinitrile
- B. 1,2,3-Tricyanopropane
- C. 3-Cyano-1,5-dinitrilepentane
- D. Propane-1,2,3-tricarbonitrile

Answer: D



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8. The IUPAC name of compound



- A. 3-Formyl-1,5-pentanedial
- B. 1,2,3-Triformylpropane

C. Propanetrial

D. Propane-1,2,3-tricarbaldehyde

Answer: D

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9. The IUPAC name of citric acid is

A. 1,2,3-Tricarboxy-2-propanol

B. 3-Carboxy-3-hydroxy-1,5-pentanedioic acid

C. 3-Hydroxy-3-carboxy-1,5-pentanedioic acid

D. 3-Hydroxy-1,2,3-tricaboxypropane

Answer: B

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10. Which of the following is not an aromatic species ?

- A. Tropylium cation
- B. Cyclooctatetraene
- C. Cyclopentadienyl anion
- D. Benzene

Answer: B



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11. Vinyl acetylene + $HCl \rightarrow X$. Here, X is :

- A. Chloroprene
- B. Acetylene dichloride
- C. Crotonylene

D. Crotonic acid

Answer: A

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12. Which is the possible number of stereo isomers for the following formula ? $CH_2OH(CHOH)_3CHO$

A. 4

B. 8

C. 12

D. 16

Answer: B

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13. Which of the following method is employed to distinguish optical isomers ?

- A. Chemical test
- B. Polarimetry
- C. Spectroscopy
- D. Boiling/Melting point determination.

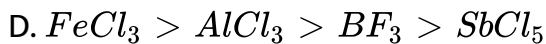
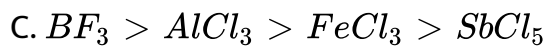
Answer: B



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14. The order of reactivity of $AlCl_3$, BF_3 , $SbCl_5$, $FeCl_3$ in Friedal Craft reaction varies as

- A. $AlCl_3 > BF_3 > FeCl_3 > SbCl_5$
- B. $AlCl_3 < BF_3 < SbCl_5 < FeCl_3$



Answer: A

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15. The π electron cloud in naphthalene contains

A. 10 π -electrons

B. 6 π - electrons

C. 8 π - electrons

D. 12 π -electrons

Answer: A

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16. The energy difference between the chair and the boat conformations of cyclohexane is

A. 44kJmol^{-1}

B. 24kJmol^{-1}

C. 34kJmol^{-1}

D. 68kJmol^{-1}

Answer: A

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17. What type of isomerism is shown by benzaldoxime ?

A. Optical

B. Functional

C. Metamerism

D. Geometrical

Answer: D

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18. The strongest acid amongst the following is

A. Salicylic acid

B. m-Hydroxybenzoic acid

C. p-Hydroxybenzoic acid

D. Benzoic acid

Answer: A

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19. Lactic acid loses optical activity when reduced with red P and HI because

- A. chirality of the molecule is destroyed
- B. symmetry of the molecule is destroyed
- C. spatial arrangement is changed
- D. racemic mixture is changed

Answer: A

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20. The various compounds corresponding to molecular formula C_5H_{10} are

- A. Chain isomers only
- B. Functional isomers only

C. Position isomers only

D. Both chain as well as position isomers.

Answer: D

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21. The type of isomerism observed in urea and



A. Chain

B. Position

C. Geometrical

D. Tautomerism

Answer: D

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22. Optically active isomers but not mirror images are called

- A. Enantiomers
- B. Mesomers
- C. Tautomers
- D. Diastereoisomers

Answer: D

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23. A compound having n independent asymmetric centres will have

- A. n racemates
- B. $2n$ racemates
- C. 2^{n+1} racemates

D. 2^{n-1} racemates

Answer: D

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24. The energy of $C \equiv C$ triple bond in acetylene in $kJmol^{-1}$ is

A. 512

B. 251

C. 152

D. 125

Answer: B

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25. The IUPAC name of $C_6H_5 - C \equiv N$ is

- A. Cyanobenzene
- B. Phenyl cyanide
- C. Phenyl nitrile
- D. Benzenenitrile

Answer: D



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26. Ethylene is obtained on electrolysing aqueous solution of :

- A. Pot. Succinate
- B. Pot. Fumarate
- C. Pot. Acetate

D. Calcium carbide

Answer: B



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27. Bacterial decomposition of wood gives :

A. Methane

B. Ethane

C. Ethylene

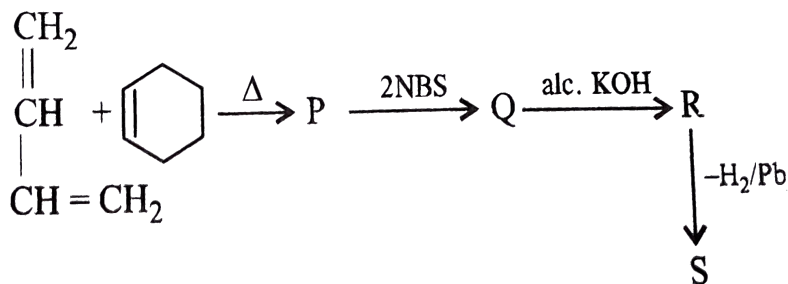
D. Acetylene

Answer: A



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28. The final product (S) formed in the following reaction sequence is



- A. Naphthalane
- B. Tetralin
- C. Benzene
- D. Anthracene

Answer: A

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29. Petroleum consists mainly of

A. aliphatic hydrocarbons

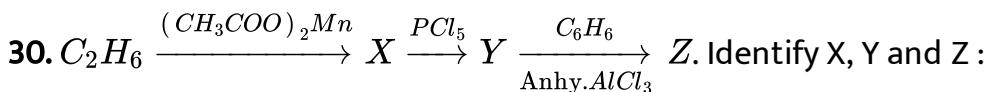
B. aromatic hydrocarbons

C. aliphatic alcohols

D. none of these

Answer: A

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A. $CO_2, COCl, C_6H_5COCl$

B. $CO_2, COCl, C_6H_5CH_2COCl$

C. $CH_3COOH, CH_3COCl, C_6H_5COCH_3$

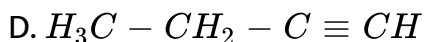
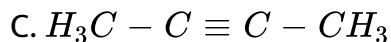
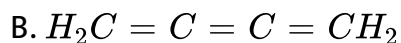
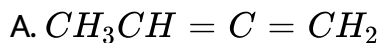
D. $HCOOH, HCOCl, C_6H_5CHO$

Answer: C



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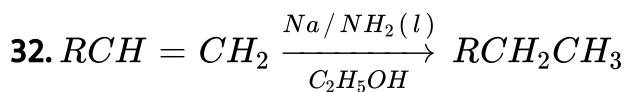
31. $R \xrightarrow{\text{Alc. KOH}} CH_3 - CH = C = CH_2$ R in the above reaction is



Answer: D



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The reaction is called as:

A. Arndt-Eistert Synthesis

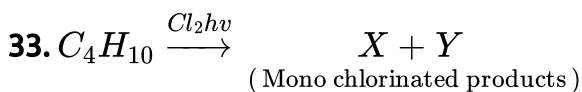
B. Birch Reduction

C. Clemmensen Reduction

D. Fischer-Spier Reaction

Answer: B

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The yield of X and Y formed in the above reaction is

A. 50: 50

B. 72: 28

C. 45: 55

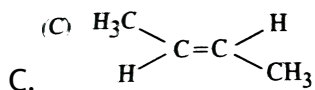
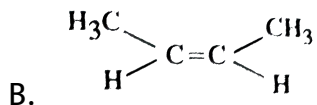
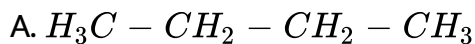
D. 60: 40

Answer: B



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34. $H_3C - C \equiv C - CH_3 \xrightarrow{Na / Liq. NH_3} X$ In the above reaction X is



D. Both (B) and (C)

Answer: C



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35. The angle strain in cyclopropane is :

A. $0^\circ 44'$

B. $24^{\circ} 44'$

C. $9^{\circ} 44'$

D. $5^{\circ} 16'$

Answer: B

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36. $BeC_2 + H_2O \rightarrow$ The products of above reaction are :

A. $Be(OH)_2$ and CO_2

B. $Be(OH)_2$ and CH_4

C. $Be(OH)_2$ and $H_2C = CH_2$

D. $Be(OH)_2$ and $HC \equiv CH$

Answer: B

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37. In Wurtz reaction of alkyl halides, the reactivity of alkyl halides follows the decreasing order,

A. RI gt RBr gt RCl

B. RCl gt RBr gt RI

C. RBr gt RI gt RCl

D. None of these

Answer: A



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38. Hydroxylation of propyne in the presence of $HgSO_4 / H_2SO_4$ is initiated by the attack of :

A. carbene

B. free radical

C. electrophile

D. nucleophile

Answer: D

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39. $CH \equiv CH \xrightarrow[\text{Pressure}]{Ni(CN)_2}$ The product in the above reaction is :

A. Benzene

B. Ethane

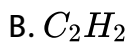
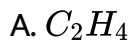
C. Cyclohexane

D. Cyclooctatetraene

Answer: D

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40. An anaesthetic : narcylene, is the commercial name of :



D. Ether

Answer: B



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BRAIN TEASERS - 10

1. What is not correct tautomers ?

A. They have different electronic as well as atomic arrangements

B. They exist in equilibrium

C. They possess same electronic arrangement but different atomic arrangements

D. They possess same molecular mass

Answer: C



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2. The IUPAC name of Protocatechualdehyde is

A. 3,4-Dihydroxybenzaldehyde

B. 4-hydroxy-3-methoxy benzaldehyde

C. 2-hydroxy benzaldehyde

D. None of the above

Answer: A



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3. Whose name is associated with the introduction of term tautomerism ?

A. Rutherford

B. Kakule

C. Laar

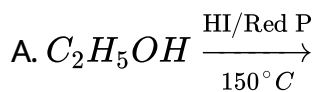
D. Dewar

Answer: C



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4. Which of the following reagents will not yield alkene?



- B. Refluxing butanone with Zn/Hg-HCl
- C. Hydroxylation of ethyne
- D. Electrolysis of sodium propionate solution

Answer: C

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5. n-Heptane passed over chromium trioxide supported over alumina at 873 K finally gives

- A. Toluene
- B. Cycloheptane
- C. Carboxycyclohexane
- D. Ethylcyclopentane

Answer: A



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6. Which statement is not correct ?

- A. Pyrolysis of ethane produces mixture of ethene, hydrogen and methane
- B. Ethane can be sulphonated by treatment with conc. H_2SO_4
- C. Alkanes with 1-5 carbon atoms can be nitrated by vapour phase nitration technique
- D. n-butane can undergo isomerisation in the presence of aluminium chloride at 300 K.

Answer: B



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7. When aqueous solution succinate is electrolysed a gas X is produced along with CO_2 and H_2 . X on bubbling through aqueous Br_2 produces

- A. Ethyl bromide
- B. Ethylene glycol
- C. Ethylene bromohydrine
- D. Ethylenedene dibromide

Answer: C

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8. The conversion of ethyl methyl ketoxime to N-methylpropanamide represents the example of which of the following type of the following type of organic reaction

A. Elimination

B. Rearrangement

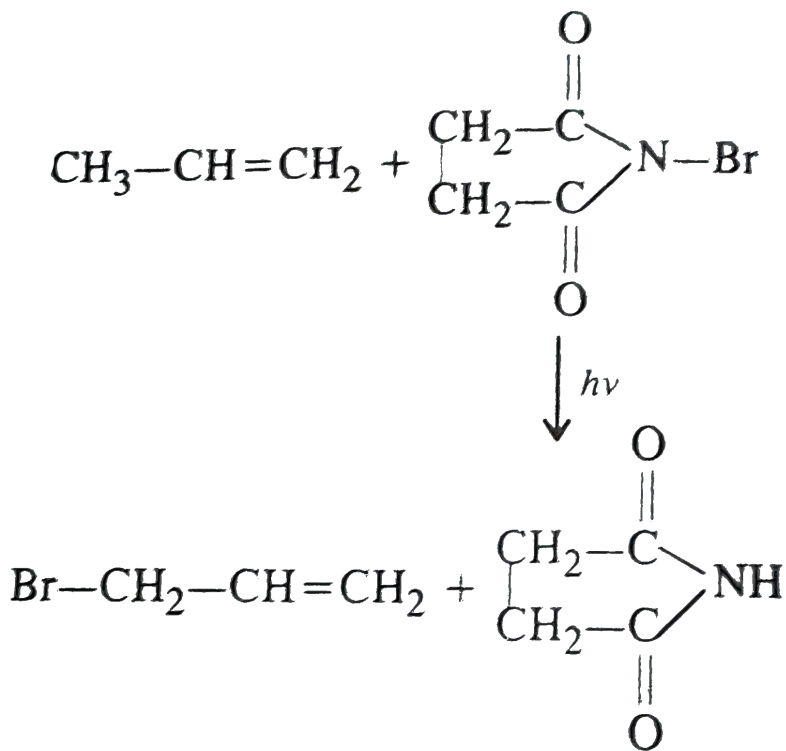
C. Substitution

D. Addition

Answer: B



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9.

The above reaction is called

- A. Wohl Zeigler bromination
- B. Strecker's synthesis
- C. Tischenko reaction
- D. Diel's Alder reaction

Answer: A



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10. When propane is allowed to react with diazomethane in the presence of U.V. radiation, the product formed is

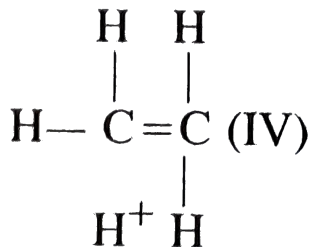
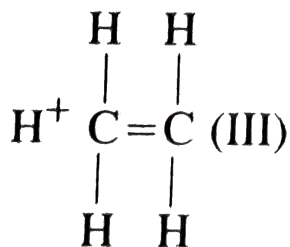
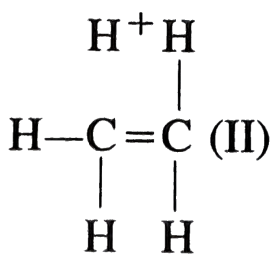
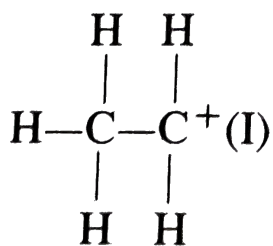
- A. Cyclopropane
- B. Cyclobutane
- C. Butene
- D. Methylcyclopropane

Answer: D



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11. Ethyl carbocation can be considered as hybrid of the following four structures



The phenomenon associated with above type of the resonance is

- A. Hyperconjugation
- B. Heterovalent resonance
- C. Conjugation
- D. Isomerism

Answer: A

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12. Which of the following species is less reactive than benzene towards ring substitution reactions ?

- A. Chlorobenzene
- B. Bromobenzene
- C. Nitrobenzene
- D. Aniline

Answer: C

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13. During bromination of benzene in the presence of $FeBr_3$ the species that attacks the ring to initiate the process is

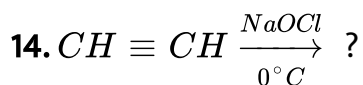
- A. $FeBr_4^-$
- B. Br^+

C. Br^-

D. Br_2 molecule

Answer: B

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The product in the above reaction is

A. 1-Chloroethane

B. 1,1-Dichloroacetaldehyde

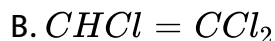
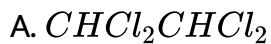
C. 1,2-Dichloroethyne

D. Crotonylchloride

Answer: C

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15. Mustard gas is:



Answer: C



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16. One of the reactive intermediates of organic reactions contains a divalent carbon surrounded by six electrons but bearing no electrical charge. The species is called

A. Carbene

B. Carbenium ion

C. Carbocation

D. Methylene group

Answer: A



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17. Which of the following compounds will not show geometrical isomerism ?

A. 1,2-Dimethylcyclohexane

B. 2-Methylpentane-2

C. 2-Pentene

D. Maleic acid.

Answer: B



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18. Which of the following structures does not contain any chiral C atom but represent the chirality in the structure ?

A. 2-Ethyl-3-hexene

B. 2,3-Pentadiene

C. 1,3-Butadiene

D. Pent-3-en-1-yne

Answer: B



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19. The lowest possible alkene with ethyl group as substituent possess mol. Mass :

A. 16

B. 72

C. 84

D. 100

Answer: D



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20. The correct order of reactivity of the compounds

(I) $C_6H_5H_2(Br)$, (II) $C_6H_5CH(C_6H_5)Br$, (III) $C_6H_5CH(CH_3)Br$,

(IV) $C_6H_5C(CH_3)(C_6H_5)Br$ in the increasing order of reactivity in

S_N2 reactions is

A. (I) lt (II) lt (III) lt (IV)

B. (IV) lt (III) lt (II) lt (I)

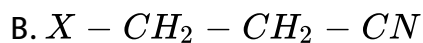
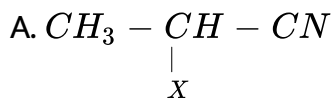
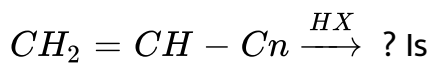
C. (I) lt (III) lt (II) lt (IV)

D. (IV) It (II) It (III) It (I)

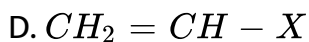
Answer: C

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21. The major product in the reaction



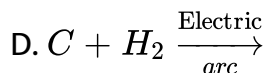
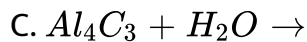
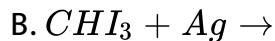
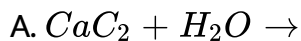
C. Both products are formed in equal yield



Answer: B

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22. Which of the following reaction does not produce ethyne ?



Answer: C



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23. Dehalogenation of vicinal dihalides with Zn/alc. Mainly produces

A. Alcohol

B. Alkene

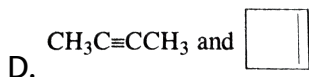
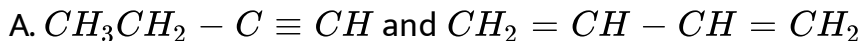
C. Alkyne

D. Alkane

Answer: B

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24. An organic compound with formula $C_4H_6(X)$ gives precipitate of X and reacts with 1 mole of Br_2 to form 1, 4-dibromo-2-butene. X and Y are

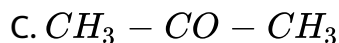
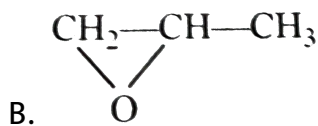
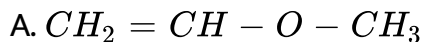


Answer: A

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25. An organic compound with formula $C_nH_{2n}O$ has mol. Mass 58. It possesses an acyclic structure with no carbon-carbon multiple bond.

The compound can be



Answer: C

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26. The correct order of reactivity of the compounds

(I) $C_6H_5H_2(Br)$, (II) $C_6H_5CH(C_6H_5)Br$, (III) $C_6H_5CH(CH_3)Br$,

(IV) $C_6H_5C(CH_3)(C_6H_5)Br$ in the increasing order of reactivity in S_N2 reactions is

- A. (I) lt (II) lt (III) lt (IV)
- B. (IV) lt (III) lt (II) lt (I)
- C. (I) lt (III) lt (II) lt (IV)
- D. (IV) lt (II) lt (III) lt (I)

Answer: D

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27. An aromatic compound C_7H_7Cl on oxidation gives another aromatic compound which on soda lime decarboxylation produces benzene. The original compound is

- A. o-chlorotoluene
- B. m-chlorotoluene

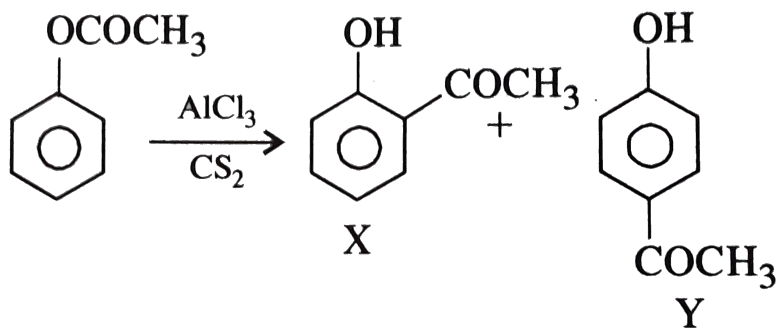
C. Benzyl chloride

D. p-chlorotoluene

Answer: C

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28. Consider the reaction



Choose the correct statement

A. X is more volatile than Y

B. Y is more volatile than X

C. b.p. of X and Y are same

D. X and Y are homologues

Answer: A

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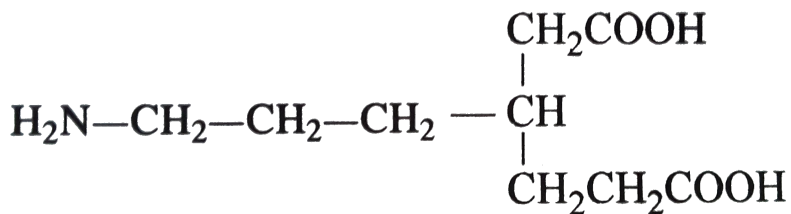
29. An organic compound A ($C_4H_{10}O$) has two enantiomeric forms and on dehydration it gives B (major product) and C (minor product). B and C are treated with HBr/Peroxide and the compounds so produced were subjected to alkaline hydrolysis then

- A. B will give an isomer of A
- B. C will give an isomer of A
- C. Neither of them will give isomer of A
- D. Both B and C will give isomer of A

Answer: B



30. The correct name of compound given below is



- A. 7-Aminom-4-(carboxymethyl) heptanoic acid
- B. 6-Amino-3-(carboxyethyl) hexanoic acid
- C. 4-(3-Aminmopropyl)hexane-1,6-dioic acid
- D. 3-(3-Aminopropyl)hexane-1,6-dioic acid

Answer: D

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31. S_N1 reaction is favoured by

- A. Non-polar solvents
- B. Crowding at the α -carbon atom
- C. Small groups on the carbon attached to the halogen atom
- D. All the above

Answer: B

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32. The number of σ bonds in naphthalene molecule is :

- A. 19
- B. 11
- C. 21
- D. 15

Answer: A



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33. The two isomeric compounds with formula C_5H_{10} are A and B. A decolourises Br_2 in CCl_4 but B does not. Pick up the correct statement about A and B

- A. A can be cyclopentane
- B. B can be cyclopentane
- C. A and B are both olefins
- D. A cannot be 2-pentene

Answer: B



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34. Given three compounds X, Y, Z as 1, 2, dimethylcyclohexane (X), 4-methyl cyclopentene (Y) and 3-methylcyclohexene (Z). The number of chiral carbon atoms in X, Y, Z would respectively be

A. 2, 1, 1

B. 1, 1, 1

C. 2, 0, 2

D. 2, 0, 1

Answer: D

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35. Which compound on $KMnO_4$ oxidation yields phthalic acid ?

A. o-Xylene

B. Ethyl benzene

C. o-Cresol

D. o-Phenylene dichloride

Answer: A



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36. Which of the following compounds on reductive ozonolysis forms only glyoxal ?

A. Ethyne

B. Ethene

C. 1,3-butadiene

D. None of these

Answer: A



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37. 0.256 g of some nitrogenous compound was kjeldahlised and produced 0.155 g of ammonia. The % of nitrogen in the organic compound is approximately

- A. 5 %
- B. 50 %
- C. 30 %
- D. 80 %

Answer: B

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38. Which of the following compound on treatment with methanol is potassium methoxide will yield methyl vinyl ether ?

- A. Ethene
- B. Propene
- C. Ethyne
- D. 1, 3-butadiene

Answer: C



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39. The alkene which will react with $KMnO_4$ to give pyruvic acid is

- A. Ethyne
- B. Propyne
- C. Butyne
- D. 2-Pentyne

Answer: B



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40. Acrylonitrile is given by reagents

- A. Acrylic acid and KCN
- B. Ethyne and KCN
- C. Ethyne and HCN/Be^{2+}
- D. Ethyne and HOCl.

Answer: C



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UNIT TEST - 5

1. Which one is not true for all the members of a homologous series

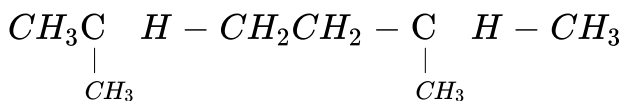
- A. All members are represented by the same general formula.
- B. All members have same chemical properties
- C. All members have same physical properties
- D. All members have same functional group

Answer: C



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2. The number of secondary atoms in the following compounds are



- A. 1
- B. 2
- C. 3
- D. 4

Answer: D

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3. The alkane which has only primary hydrogen atoms is

A. pentane

B. isopentane

C. neopentane

D. 2,2-dimethyl butane

Answer: C

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4. Which of the following compounds have isopropyl group

A. 2,2,3,3-tetramethyl pentane

B. 2,2-dimethyl butane

C. 2,2,3-trimethyl

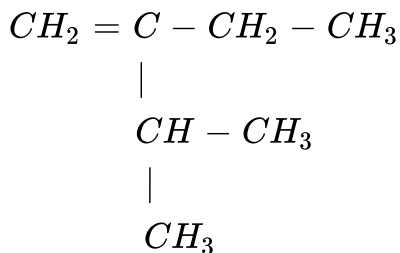
D. 2-methyl pentane

Answer: D



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5. The IUPAC name of following compound is



A. 2-ethyl-3-methyl but-1-ene

B. 2-isopropyl but-1-ene

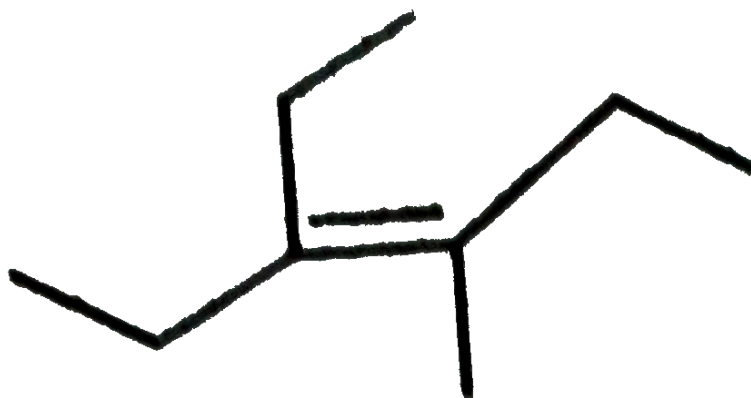
C. 3 ethyl-2-methyl but-3-ene

D. ethyl isopropyl ethene

Answer: A

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6. The IUPAC name of



is

A. 2,2,4,4 tetramethyl pentane

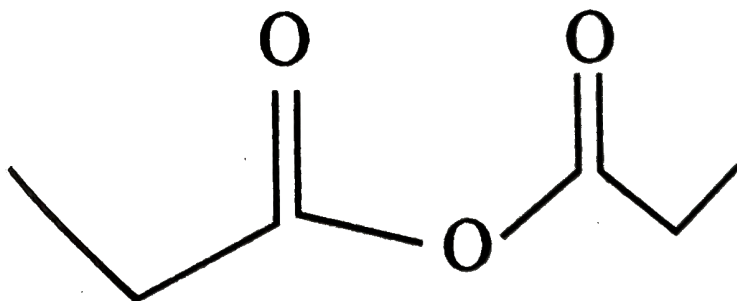
B. 2,2-dimethyl propane

C. 4-ethyl-3-methyl,hex-3-ene

D. ethyl is a propyl ethene

Answer: C

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7.

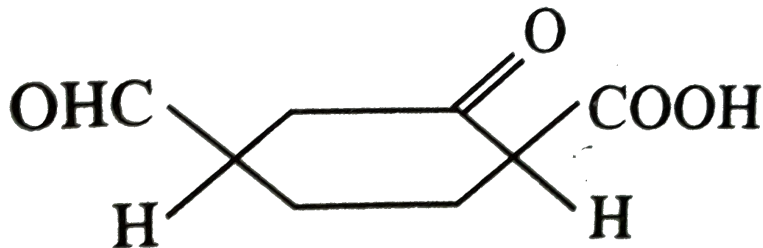
The IUPAC name of the compound is

- A. propionic acid
- B. dipropanoic acid
- C. ethoxy propanoic acid
- D. propanoic acid

Answer: D

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8. The IUPAC name of the following poly functional

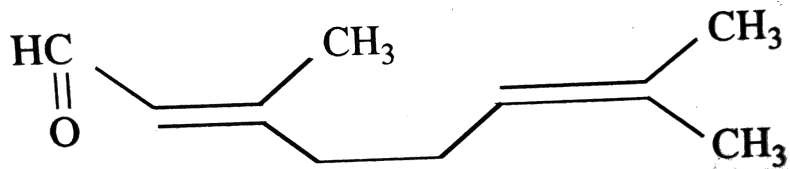


- A. 2,4-dioxo cyclo hexanoic acid
- B. 2,4, dioxo cyclo heptanoic acid
- C. 4-formyl-2-oxo cyclo hexane-1-carboxylic acid.
- D. 2,4 dioxo cyclo hexane-1-carboxylic acid

Answer: C

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9. Assign the IUPAC name to the following compound

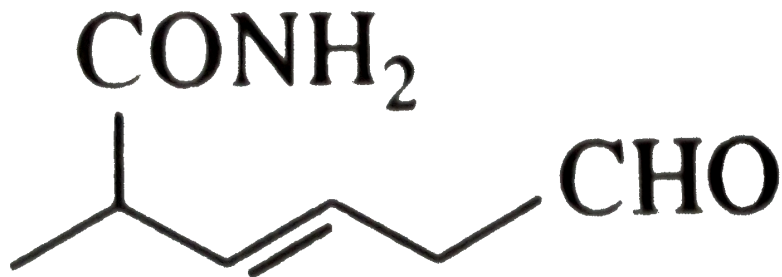


- A. 3,7-dimethyl hepta-2,6-dien-1-al
- B. 3,7-dimethyl octa-2,6-dien-1-al
- C. 2,6-dimethyl octa-2,6-dien-1-al
- D. None of the above

Answer: B

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10. The IUPAC name of



- A. 2-Carbamyol hexanal
- B. 2-carbamyol hex-3-en-1-al
- C. 6-keto-2-methyl hexanamide
- D. 5-formyl-2-methyl pent-3-en-1-amide

Answer: D

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11. Mistake in the name but-1-ene ol is

A. numbering from the wrong end

B. wrong parent alkane

C. incorrect ending

D. no mistake

Answer: A



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12. Racemic mixture is formed by mixing two:

A. Isomeric compounds

B. Chiral compounds

C. meso compounds

D. enantiomers with chiral carbon

Answer: D



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13. Geometrical isomerism is not shown by

A. 1,1-dichloro-1-pentene

B. 1,2-dichloro-1-pentene

C. 1,3-dichloro-2-pentene

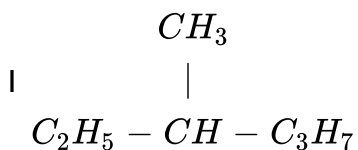
D. 1,4-dichloro-2-pentene

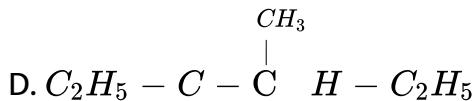
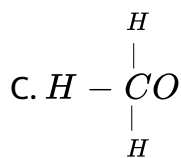
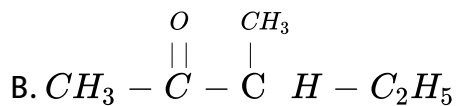
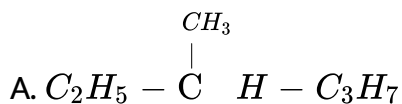
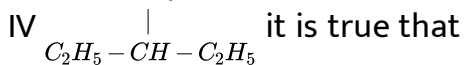
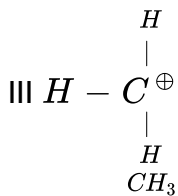
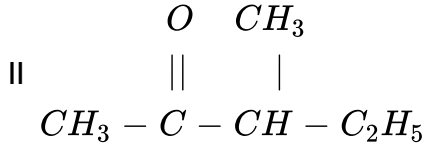
Answer: A



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14. Among the following four structures I to IV





Answer: B

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15. Which of the following compounds will show meso isomer ?

- A. 2-chlorobutane
- B. 2,3, dichloro butane
- C. 2,3-dichloropentane
- D. 2-hydroxypropanoic acid

Answer: B

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16. Which of the following compounds will show metamerism ?

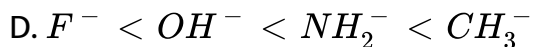
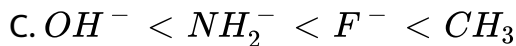
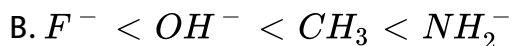
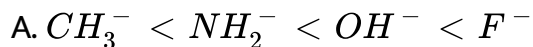
- A. $CH_3COOC_2H_5$
- B. $C_2H_5 - S - C_2H_5$
- C. $CH_3 - O - CH_3$
- D. $CH_3 - OC_2H_5$

Answer: B



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17. Correct order of nucleophilicity is

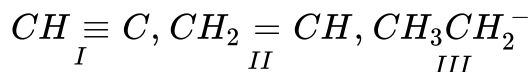


Answer: D



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18. The basic strength of



will be in order

A. I lt II lt III

B. II lt III lt I

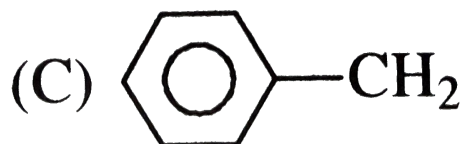
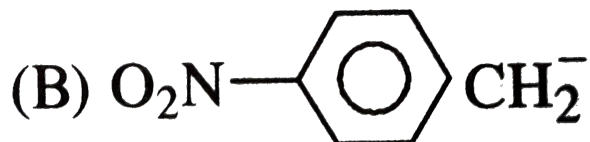
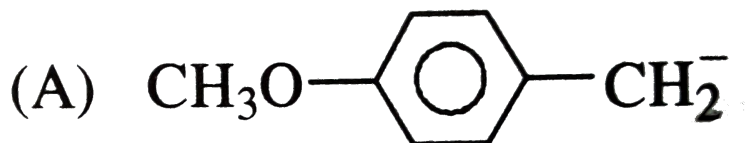
C. III lt II lt I

D. III lt I lt II

Answer: A

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19. Consider the following carbanions



Correct order of stability is

A. 1 gt 2 gt 3

B. 3 gt 2 gt 1

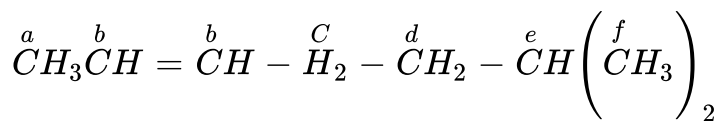
C. 2 gt 3 gt 1

D. 1 gt 3 gt 2

Answer: C

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20. Different hydrogen in



represented by alphabets. Arrange them in decreasing order of reactivity towards radical substitution

A. c gt a gt e gt d gt f gt b

B. f gt b gt a gt c gt d gt e

C. b gt c gt a gt f gt d gt e

D. a gt b gt c gt d gt e gt f

Answer: A

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21. Which of the following has zero dipole moment?

A. cis-2-butene

B. trans-2-butene

C. 1-butene

D. 2-methyl 1-propene

Answer: B

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22. Which of the following paramagnetic in nature

- A. Carbonium ion
- B. Free radical
- C. Carbene
- D. Nitrene

Answer: B



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23. Reactivity towards nucleophilic additions reaction of (I) HCHO (II), CH_3CHO (III) CH_3COCH_3 is

- A. II gt III gt I
- B. III gt II gt I

C. I gt II gt III

D. I gt II gt III

Answer: C



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24. During $AgNO_3$ test for detection of halogens. Sodium extract is boiled with a few drops of conc HNO_3 to decompose

A. NaCN

B. Na_2S_g

C. both A and B

D. None of these

Answer: C



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25. The empirical formula compound is CH_2 It will be

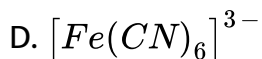
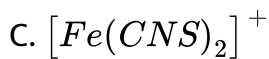
- A. alkene
- B. arene
- C. alkane
- D. alkyne

Answer: A

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26. Red colour complex ion formed on adding $FeCl_3$ to sodium extract when N and S both are present in organic compound is

- A. $[Fe(CN)_6]^{4-}$
- B. $[Fe(CNS)]^{2+}$

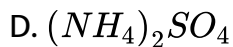


Answer: B



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27. Dumas method involves the determination of nitrogen content in the organic compound in the form of



Answer: B



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28. The present of halogens in an organic compound is detected by

- A. Iodoform Test
- B. Silver nitrate Test
- C. Beilstein test
- D. millon's test

Answer: B

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29. Steam distillation is based on the fact that vaporisation of organic liquid takes place at

- A. a lower temperature than its boiling point
- B. a higher temperature that its boiling point

C. its boiling point

D. water and organic liquid both undergo distillations

Answer: A



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30. Acetylene does not react with

A. Na

B. ammoniacal $AgNO_3$

C. HCl

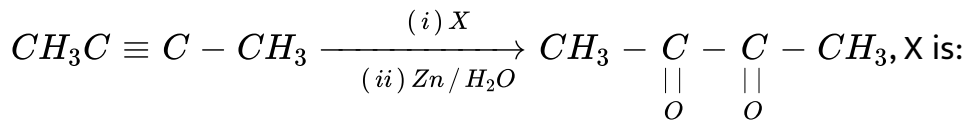
D. NaOH.

Answer: D



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31. In the reaction,



A. HNO_3

B. O_2

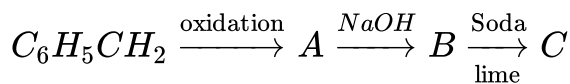
C. O_3

D. $KMnO_4$

Answer: C

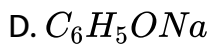
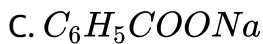
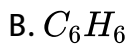
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32. In the reaction



Identify C

A. C_6H_5OH

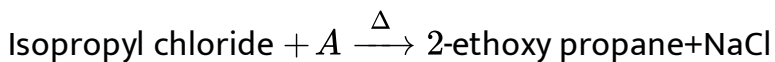


Answer: B

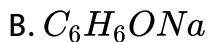
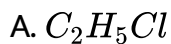


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33. Consider the following reaction,



The compound A is



Answer: B

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34. In alkaline hydrolysis of a tertiary halide by aqueous alkali, if concentration of alkali is doubled, then the reaction rate

- A. will be doubled
- B. will be halved
- C. will remain constant
- D. can't say

Answer: C

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35. A compound obtained by hydrolysis of the substance A, on reduction form 2-hexanol. Hence the substance A is :

- A. 3,3-dichloro hexane
- B. 2,3 -dichlorohexane
- C. 2,2-dichloro hexane
- D. 1,1- dichlorohexene

Answer: C

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36. Bottles containing C_6H_5I and $C_6H_5 - CH_2I$ lost their original labels. They were labelled A and B for testing. A and B were separately taken in a test tube and boiled with $NaOH$ solution. The end solution in each tube was made acidic with dilute HNO_3 and then some $AgNO_3$ solution was added. Substance B gave a yellow

precipitate. Which one of the following statements is true for this experiment.

- A. A was C_6H_5I
- B. A was $C_6H_5CH_2I$
- C. B was $C_6H_5CH_2I$
- D. Additions was unnecessary

Answer: A

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

- A. resonance
- B. stability carbanium ion

C. high boiling point

D. None of the above

Answer: A



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