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India's Number 1 Education App

CHEMISTRY

BOOKS - UNIVERSAL BOOK DEPOT 1960 CHEMISTRY (HINGLISH)

HYDROCARBON

ORDINARY THINKING (Objective question (Alkane))

1. The most important method of preparation of hydrocarbons of lower carbon number is

A. Pyrolysis of higher carbon number hydrocarbons

B. Electrolysis of salts of fatty acids

C. Sabatier and Senderens reaction

D. Direct synthesis

Answer: A

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2. Solid methane is

A. Molecular solid

B. ionic solid

C. Covalent solid

D. Not possible

Answer: A

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3. Sample of 2,3-dibromo-3-methylpentane is heated with zinc dust. The resulting products is isolated and heated with HI in the presence of

phosphorus. Indicate which is the structure that represents the final product in the reaction:

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

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

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

D. $CH_2 - CH - \underset{CH_3}{\overset{|}{C}}(I) - CH_2 - CH_3$

Answer: A

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4. Which is the best antiknock compound or Which one of following substances is used as an antiknock compound

A. Lead tetrachloride

B. Lead acetate

C. Zinc ethyl

D. Tetraethyl lead (TEL)

Answer: D

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5. In the commercial gasolines, the type of hydrocarbons which are more desirable is

A. Branched hydrocarbon

B. Straight-chain hydrocarbon

C. Linear unsaturated hydrocarbon

D. Toluene

Answer: A

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6. Which of the following reaction is expected to readily gives hydrocarbon product in good yields

A. $RCOOK \xrightarrow{\text{Oxidation Electrolysis}}$

B. $RCOOAg \xrightarrow{I_2}$

C. $CH_3 - CH_3 \xrightarrow[\text{hv}]{Cl_2}$

D. $(CH_3)_2CCl \xrightarrow{C_2H_5OH}$

Answer: A

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7. The reaction $CH_4 + Cl_2 \xrightarrow{\text{uv light}} CH_3Cl + HCl$ is an example of

A. Addition reactions

B. Substitution reaction

C. Elimination reaction

D. Rearrangement reaction

Answer: B

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8. Propane is obtained from propene, by which of the following methods

A. Wurtz reaction

B. Dehydrogenation

C. Frankland reaction

D. Catalytic hydrogenation

Answer: D

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9. Liquid hydrocarbon can be converted to a mixture of gaswous hydrocarbon by

A. Cracking

B. Hydrolysis

C. Oxidation

D. Distillation under reduced pressure

Answer: A

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10. Which of the following is not formed by the reaction of Cl_2 on CH_4 in sunlight

A. $CHCl_3$

B. CH_3Cl

C. CH_3CH_3

D. $CH_3CH_2CH_3$

Answer: D

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11. Which of the following statements is not true for ethane?

A. It can be chlorinated with chlorine

B. It can be catalytically hydrogenated

C. When oxidised produces CO_2 and H_2O

D. It is a homologue of iso-butano

Answer: B

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12. Petroleum refining is

A. Distillation of petroleum to get different fractions

B. Obtaining aromatic compounds from aliphatic compounds present in petroleum

C. Cracking of petroleum to get gaseous hydrocarbons

D. Purification of petroleum

Answer: A

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13. On mixing an alkane with chlorine and irradiating with ultra violet light, it forms only one monochloro alkane. The alkane is

A. Propane

B. Pentane

C. Iso-pentane

D. Neo-pentane

Answer: D

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14. Iodoethane reacts with sodium in the presence of dry ether The product is

A. Pentane

B. Propane

C. Butene

D. Butane

Answer: D

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15. The final product of complete oxidation of hydrocarbons is

A. Acid

B. Aldehyde

C. $H_2O + CO_2$

D. Dihydric alcohol

Answer: C

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16. In alkanes, the bond angle is

A. 109.5°

B. 109°

C. 120°

D. 180°

Answer: A

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17. In the reaction $CH_3 - Br + 2Na + Br - CH_3 \rightarrow$, the reaction is called

A. Wurtz reaction

B. Aldol condensation

C. Perkin's reaction

D. Levit reaction

Answer: A

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18. The decreasing order of boiling points is

A. $n-pen\tan e>iso-pen\tan e>\ \neq open\tan e$

B. $Iso-pen\tan e>pen\tan e>\ \neq o-pen\tan e$

C. $Neo-pen\tan e>iso-pen\tan e>n-pen\tan e$

D. $n-pen\tan>\ \neq open\tan eiso-pen\tan e$

Answer: A

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19. By wurtz reaction a mixture of methyl iodide and ethyl iodide gives

A. Butane

B. Ethane

C. Propane

D. A mixture of the above three

Answer: D

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20. Methane and ethane both can be obtained in single step from

A. CH_3I

B. C_2H_5I

C. CH_3OH

D. C_2H_5OH

Answer: A

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21. Which of the following does not react with PCI_5

A. CH_3OH

B. CH_3COOH

C. CH_3CHO

D. C_2H_6

Answer: D

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22. Which represents an alkane

A. C_5H_8

B. C_8H_6

C. C_9H_{10}

D. C_7H_{16}

Answer: D

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23. Which of the following has highest percentage of hydrogen

A. CH_4

B. C_2H_4

C. C_6H_6

D. C_2H_2

Answer: A

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24. Most of the hydrocarbons from petroleum are obtained by

A. Fractional distillation

B. Fractional crystallization

C. Vaporization

D. Polymerization

Answer: A

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25. When petroleum is heated the vapours contain mainly

A. Kerosene

B. Petroleum ether

C. Diesel

D. Machine oil

Answer: B

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26. Knocking sound occurs in engine when fuel

A. Ignites slowly

B. Ignites rapidly

C. Contains water

D. Is mixed with machine oil

Answer: B

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27. On mixing tetraethyl lead to gasoline available at petrol pumps

A. Calorific value of the fuel increases

B. Odour diminishes

C. Less smoke is obtained on combustion

D. Antiknock property of fuel increases

Answer: D

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28. Gasoline has composition

A. $C_8 - C_{12}$

B. $C_2 - C_5$

C. $C_6 - C_8$

D. None of these

Answer: C

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29. Petroleum is mainly a mixture of

A. Alkanes

B. Cyclohexane

C. Benzenoid hydrocarbons

D. Alkenes

Answer: A

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30. Anhydrous sodium acetate on heating with sodalime gives

A. Acetic acid

B. Methane

C. Calcium acetate

D. Ethane

Answer: B

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31. For preparing an alkane , a concentrated aqueous solution of sodium or potassium salt of saturated carboxylic acid is subjected to

A. Hydrolysis

B. Oxidation

C. Hydrogenation

D. Electrolysis

Answer: B

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32. Sodium ethoxide is a specific reagent for

A. Dehydration

B. Dehydrogenation

C. Dehydrohalogenation

D. Dehalogenation

Answer: C

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33. In Wurtz reaction the reagent used is

A. Na

B. Na/liquid NH_3

C. Na/Dry ether

D. Na/dry alcohol

Answer: C

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34. Water gas is

A. $CO + CO_2$

B. $CO + N_2$

C. $CO + H_2$

D. $CO + N_2 + H_2$

Answer: D

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35. Daily use candles (paraffin wax) contain

A. Higher saturated hydrocarbon

B. Lower saturated hydrocarbon

C. Higher unsaturated hydrocarbon

D. Lower unsaturated hydrocarbon

Answer: A

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36. Kerosene is used as fuel because it is

A. Less volatile

B. More volatile

C. Cheap

D. Abundantly available

Answer: A

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37. Dry distillation of sodium propanoate with sodalime gives

A. Propane

B. Propene

C. Ethane

D. Ethene

Answer: D

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38. On monochlorination of pentane, the number of straight chain isomers formed is

A. 4

B. 3

C. 2

D. 1

Answer: C

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39. CH_4 is formed when

A. Sodium acetate is heated with sodalime

B. Iodomethane is reduced

C. Aluminium carbide reacts with water

D. All of these

Answer: D

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40. As the number of carbon atoms in a chain increases the boiling point of alkanes

A. Increases

B. Decreases

C. Remains same

D. May increase or decrease

Answer: A

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41. Kerosene is a mixture of

A. Alkanes

B. Aromatic compounds

C. Alcohols

D. Aliphatic acids

Answer: A

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42. Octane number can be changed by:

A. Isomerisation

B. Alkylation

C. Cyclisation

D. All of these

Answer: D

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

A. C_3H_8

B. C_4H_{10}

C. C_2H_6

D. C_2H_4

Answer: C

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44. Producer gas is a mixture of ..... And .....,

A. CO and N_2

B. CO_2 and H_2

C. N_2 and O_2

D. CH_4 and N_2

Answer: A

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45. The chemical added to leaded petrol to prevent the deposition of lead in the combustion chamber is:

A. Iso-octane

B. Ethylene dibromide

C. Tetraethyl lead

D. Mercaptan

Answer: B

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46. Photochemical chlorination is initiated by a process of

A. Pyrolysis

B. Substitution

C. Homolysis

D. Peroxidation

Answer: C

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47. Which of the following has highest octane number?

A. n-hexane

B. n-heptane

C. n-pentane

D. 2,2,4-trimethyl pentane

Answer: D

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48. Which one of the following has the lowest boiling point

A. 2-methylbutane

B. 2-methylpropane

C. 2,2-dimethyl propane

D. n-pentane

Answer: B

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49. The correct order of boiling points of 2, 2-dimethylpropane, 2 methylbutane and n pentane is

A. n-pentane gt 2,2-dimethylpropane gt 2-methylbutane

B. n-pentane gt 2-methylbutane gt 2,2-dimethylpropane

C. 2,2-dimethylpropane gt 2-methylbutanegt n-pentane

D. 2-methylbutane gt n-pentane gt 2,2-dimethylpropane

Answer: B

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50. For preparing an alkane , a concentrated aqueous solution of sodium or potassium salt of saturated carboxylic acid is subjected to

A. Hydrolysis

B. Oxidation

C. Hydrogenation

D. Electrolysis

Answer: D

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51. Halogenation of alkanes is an example of

A. Electrophilic substitution

B. Nucleophilic substitution

C. Free-radical substitution

D. Oxidation

Answer: C

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52. Formation of alkane by the action of Zn on alkyl halide is called

A. Frankland's reaction

B. Wurtz reaction

C. Cannizzaro reaction

D. Kolbe's reaction

Answer: A

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53. The most volatile compound is

A. 2,2-dimethyl propane

B. 2-methyl butane

C. Isobutane

D. n-pentane

Answer: A

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54. Which of the following reactions will not give propane

A. $CH_3CH_2CH_2Cl \xrightarrow[H_2O]{\text{Mg/ether}}$

B. $CH_3COCl \xrightarrow[H_2O]{CH_3MgX}$

C. $CH_3CH=CH_2 \xrightarrow[CH_3COOH]{B_2H_6}$

D. $CH_3\underset{\underset{OH}{|}}{C}H-CH_3 \xrightarrow{\text{P/HI}}$

Answer: B

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55. The alkane that yields two isomeric monobromo derivatives is

A. Neopentane

B. Ethane

C. Methane

D. Propane

Answer: D

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56. Which one of the following compounds does not form an ozonide?

A. Ethene

B. Propyne

C. Propene

D. Propane

Answer: D

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57. Gasoline is obtained from crude petroleum oil by its

A. Fractional distillation

B. Vacuum distillation

C. Steam distillation

D. Pyrolysis

Answer: A

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58. Which of the following does not give alkane

A. Reaction of CH_3I with Na in ether

B. Reaction of sodium acetate with sodalime

C. Electrolysis of concentrated sodium acetate solution

D. Reaction of ethyl chloride with alc. KOH

Answer: D

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59. LPG is mixture of

A. $C_6H_{12} + C_6H_6$

B. $C_4H_{10} + C_3H_8$

C. $C_2H_4 + C_2H_2$

D. $C_2H_4 + CH_4$

Answer: B

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60. In which case butane is formed

A. $2C_2H_5 - Cl + Na$

B. $C_2H_5COOH + Na_2CO_3$

C. $CH_2 = CH - CH_3 + H_2SO_4$

D. None of these

Answer: A

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61. $C_2H_5I \xrightarrow{[H]} A$. A is

A. Ethane

B. Butane

C. Methane

D. Methyl iodide

Answer: A

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62. Natural gas is a mixture of

A. $CO + CO_2$

B. $CO + N_2$

C. $CO + H_2 + CH_4$

D. $CH_4 + C_2H_6 + C_3H_8$

Answer: D

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63. Which of the following represents the most oxidized form of hydrocarbon ?

A. CO_2

B. RCHO

C. RCOOH

D. RCOOOH

Answer: A

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64. Out of the following fractions of petroleum, the one having the lowest boiling point is

A. Kerosene

B. Diesel oil

C. Gasoline

D. Heavy oil

Answer: C

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65. Which of the following is obtained at lowest temperature by fractional distillation of petroleum

A. Kerosene

B. Diesel oil

C. Gasoline

D. Heavy oil

Answer: C

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66. The natural petroleum contains

A. Saturated hydrocarbons

B. Cyclic saturated hydrocarbons

C. Compounds of sulphur

D. All of these

Answer: D

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67. Name the reaction

$$C_{10}H_{22} \xrightarrow{900\ \mathrm{K}} C_4H_8 + C_6H_{14}$$

A. Alkylation

B. Cracking

C. Pyrolysis

D. Fractionation

Answer: B

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68. At room temperature solid paraffin is

A. C_3H_8

B. C_8H_{18}

C. C_4H_{10}

D. $C_{20}H_{42}$

Answer: D

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69. The process in which higher hydrocarbons are broken down into lower hydrocarbons by controlled pyrolysis is called ___.

A. Hydrolysis

B. Cracking

C. Oxidation

D. Reduction

Answer: B

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70. Successive alkanes differ by

A. $(a) > CH_2$

B. $(b) > CH$

C. $-CH_3$

D. C_2H_4

Answer: A

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71. Which of the following alkane cannot be prepared by Wurtz synthesis?

A. CH_4

B. C_2H_6

C. C_3H_8

D. C_4H_{10}

Answer: A

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72. What is the molecular formula of the alkane, the 5.6 litre of which weight 11 g at STP

A. C_6H_{14}

B. C_4H_{10}

C. C_3H_8

D. C_2H_6

Answer: C

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73. The reaction $CH_3CH_2Cl \xrightarrow[2\text{-Cu I}]{1\text{-Li}} \xrightarrow{CH_3CH_2Cl}$ n-butane is known as

A. Wurtz synthesis

B. Corey-House synthesis

C. Kolbe synthesis

D. Friedel-Craft's synthesis

Answer: B

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74. n-hexadecane has cetane number

A. 90

B. 100

C. 110

D. Zero

Answer: B

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75. Aqueous solution of the following compound on electrolysis gives ethane

A. Acetic acid

B. Acetamide

C. Potassium acetate

D. Ethyl acetate

Answer: C

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76. Which of the following does not decolourise bromine solution in carbon disulphide

A. Acetylene

B. Propene

C. Ethane

D. Propyne

Answer: C

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77. Carbon black, which is used in making printer's ink, is obtained by decomposition of

A. Acetylene

B. Benzene

C. Carbon tetrachloride

D. Methane

Answer: D

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78. Which hydrocarbon will be most stable

A. Methane

B. Ethane

C. Propane

D. Butane

Answer: D

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79. The petrol of octane number 80 has :

A. 20% normal heptane +80% iso-octane

B. 80% normal heptane+ 20% isooctane

C. 20% normal heptane +80% normal octane

D. 80% normal heptane +20% normal octane

Answer: A

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80. Which compound is not inflammable

A. CCl_4

B. C_2H_5OH

C. CH_4

D. C_6H_6

Answer: A

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81. Which statement is NOT TRUE concerning alkanes ?

A. Large number alkanes are soluble in water

B. All alkanes have a lower density than water

C. At room temperature some alkanes are liquids, some solids and some gases

D. All alkanes burn

Answer: A

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82. Fischer Tropsch process is used for the manufacture of

A. Synthetic petrol

B. Thermosetting plastics

C. Ethanol

D. Benzene

Answer: A

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83. Thermal decomposition of alkanes in the absence of air is called as

A. Cracking

B. Oxidation

C. Combustion

D. Hydrogenation

Answer: A

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84. What will be the octane no. of best fuel

A. 80

B. 81

C. 74

D. 65

Answer: B

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85. The shape of ethane is

A. Triangular

B. Tetrahedral

C. Linear

D. None of these

Answer: B

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86. In the preparation of Grignard reagent from haloalkane, the metal used is

A. Mg

B. Li

C. Zn

D. K

Answer: A

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87. $CH_3 - CH_2 - CH_2 - CH_3 \xrightarrow[\text{HBr}]{AlCl_3}$ product. Product in above reaction is

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

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

C. $\underset{Br}{\underset{|}{CH_2}} - CH_2 - \underset{CH_3}{\underset{|}{CH_2}}$

D. All of these

Answer: B

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88. Product obtained by nitraction of propane is _____.

A. Nitropropane

B. Nitromethane

C. Nitroethane

D. All of these

Answer: D

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89. Which one gives only one monosubstitution product on chlorination

A. n pentane

B. N Pentane

C. Isopentane

D. n butane

Answer: B

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90. Of the five isomeric hexanes, the isomer which can give two monochlorinated compounds is

A. n-hexane

B. 2, 3-dimethylbutane

C. 2,2-dimethylbutane

D. 2-methylpentane

Answer: B

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91. $2-$ Methylbutane on reacting with bromine in the presence of sunlight gives mainly

A. 1-bromo-2-methylbutane

B. 2-bromo-2-methylbutane

C. 2-bromo-3-methylbutane

D. 1-bromo-3-methylbutane

Answer: B

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92. Which branched chain isomer of the hydrocarbon with molecular mass 72μ gives only one isomer of mono substituted alky halide ?

A. Tertiary butyl chloride

B. Neopentane

C. Isohexane

D. Neohexane

Answer: B

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93. How many chiral compounds are possible on monochlorination of 2-methyl butane

A. 8

B. 2

C. 6

D. 4

Answer: C

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94. Which of the following are produced from coaltar

A. Synthetic dyes

B. Drugs

C. Perfumes

D. All the three

Answer: D

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95. The order of apperance of the following with rising temperature during the refining of crude oil is _____.

A. Kerosene oil, gasoline, diesel

B. Diesel, gasoline, kerosene oil

C. Gasoline, diesel, kerosene oil

D. Gasoline, kerosene oil, diesel

Answer: D

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96. Which does not react with chlorine in dark

A. C_2H_4

B. C_2H_2

C. CH_4

D. CH_3CHO

Answer: C

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97. Heating of alkanes with fuming sulphuric acid or oleum at high temperature, which forms sulphonic acid, is called

A. Nitration

B. Halogenation

C. Sulphonation

D. Oxidation

Answer: C

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98. Which of the following is not an endothermic reaction

A. Dehydrogenation

B. Ethane to ethene

C. Combustion of propane

D. Change of chlorine molecule into chlorine atoms

Answer: C

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99. Which of the following petroleum corresponds to kerosene oil

A. $C_{15} - C_{18}$

B. $C_{10} - C_{12}$

C. $C_5 - C_9$

D. $C_1 - C_9$

Answer: B

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100. Methane can be prepared by:

A. Wurtz reaction

B. Decarboxylation

C. Hydrogenation reaction

D. All of these

Answer: B

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101. In catalytic reduction of hydrocarbons which catalyst is mostly used

A. Pt/Ni

B. Pd

C. SiO_2

D. Misch metal

Answer: A

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

A. Reacts with water

B. Is insoluble in water

C. Is highly reactive in ether

D. Becomes inactive in water

Answer: A

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103. Pick out the alkane which differs from the other members of the group

A. 2,2-dimethylpropane

B. Pentane

C. 2-methyl butane

D. 2,2-dimethyl butane

Answer: D

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104. Merthyl bromide is converted into ethan by heating it in ether medium with:

A. Al

B. Zn

C. Na

D. Cu

Answer: C

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105. Which cycloalkane has the lowest heat of combustion per CH_2 group

A. Cyclopropane

B. Cyclobutane

C. Cyclopentane

D. Cyclohexane

Answer: D

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106. n-propyl bromide on treating with alcoholic KOH produces

A. Propyne

B. Propanol

C. Propane

D. Propene

Answer: D

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107. The angle strain in cyclobutane is:

A. $19^\circ 22'$

B. $9^\circ 44'$

C. $24^\circ 44'$

D. $29^\circ 16'$

Answer: a

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108. A dibromo derivative of an alkane reacts with sodium metal to form an alicyclic hydrocarbon. The derivative is

A. 1,1-dibromopropane

B. 2,2-dibromobutane

C. 1,2-dibromoethane

D. 1,4-dibromobutane

Answer: D

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109. In the chlorination reaction of propane, mixture of products are obtained. How many isomers, the mixture contains

A. 2

B. 3

C. 4

D. 5

Answer: C

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110. Which of the following cycloalkane gives open chain compound, when reacts with bromine

A. Cyclopropane

B. Cyclopentane

C. Cyclohexane

D. Cyclo-octane

Answer: A

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111. A petroleum fraction having boiling range $70 - 200^{\circ} C$ and cotaining 6 - 10 carbon atoms per molecule is called

A. Natural gas

B. Gas oil

C. Gasoline

D. kerosene

Answer: C

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112. Which of the following has the higest knocking property ?

A. Olefins

B. Branched chain olefins

C. Straight chain olefins

D. Aromatic hydrocarbons

Answer: C

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113. When propionic acid is subjected to reduction with hydroiodic acid acid Red phosphorus ,the product formed is

A. Ethane

B. Propane

C. Butane

D. None of these

Answer: B

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114. Which of the following is oxidised by $KMnO_4$

A. Methane

B. Pentane

C. Isobutane

D. Neopentane

Answer: C

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115. Petroleum ether can be used as

A. Solvent for fat, oil, varnish and rubber

B. As a fuel

C. Both (a) and (b)

D. None of these

Answer: A

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116. Iso-octane is mixed to the petrol

A. To precipitate inorganic substances

B. To prevent freezing of petrol

C. To increase boiling point of petrol

D. As an antiknock

Answer: D

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117. Action of hydrogen chloride on $CH_3 - \underset{\underset{CH_3}{|}}{C} = CH_2$ and on $CH \equiv CH$ will predominantly give the compounds, reapectively

A. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_2Cl$ and $CH_2Cl - CH_2Cl$

B. $CH_3 - \underset{\underset{CH_3}{|}}{CCl} - CH_3$ and $CH_3 - CHCl_2$

C. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_2Cl$ and $CH_3 - CHCl_2$

D. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_3$ and $CH_2Cl - CH_2Cl$

Answer: B

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118. A mixture of propene and methane is obtained by the cracking of

A. 1-butene

B. 2-butene

C. n-butane

D. Isobutane

Answer: C

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119. Which of the following fractions of petroleum refining contains kerosene (Boiling ranges in $.^{\circ}$ C are given below)

A. 40-80

B. 80-200

C. 200-300

D. Above 300

Answer: C

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120. A mixture of methane, ethylene and acetylene gases is passed through a Wolf bottle containing ammoniacal cuprous chloride. The gas coming out is

A. Methane

B. Acetylene

C. A mixture of methane and ethylene

D. The original mixture

Answer: C

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121. Silver acetylide when heated with HCl gives

A. C_2H_4

B. H_2

C. C_2H_4

D. None of these

Answer: A

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122. Method by which aniline cannot be prepared is:

A. Hydrolysis of phenyl isocyanide with acidic solution

B. Degradation of benzamide with bromine in alkaline solution

C. Reduction of nitrobenzene with H_2/pd in ethanol

D. Potassium salt of phthalimide treated with chlorobenzene followed by hydrolysis with aqueous NaOH solution

Answer: D

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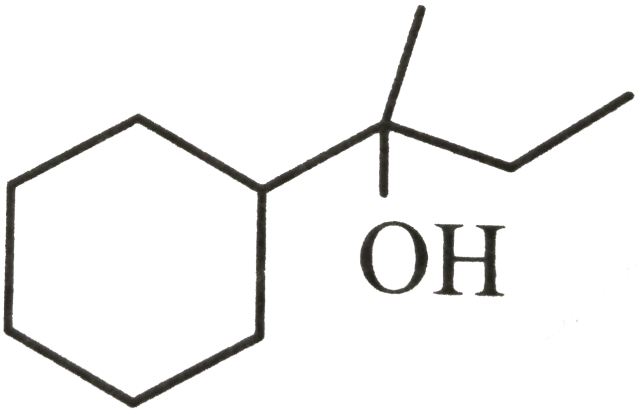
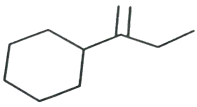
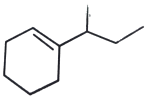
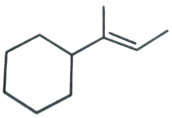
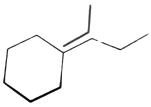
123. Which of the following is not the product of dehydration of



A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B

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124. The compound that will react most readily with gaseous bromine has the formula

A. C_2H_4

B. C_3H_6

C. C_2H_2

D. C_4H_{10}

Answer: D

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125. Hydrocarbon(A) reacts with bromine by substitution to form an alkyl bromide which by Wurtz reaction is converted to gaseous hydrocarbon containing less than four carbon atoms (A) is

A. $CH \equiv CH$

B. $CH_2 = CH_2$

C. $CH_3 - CH_3$

D. CH_4

Answer: D

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ORDINARY THINKING (Objective question) (ALKENE)

1. The disappearance of the characteristic purple colour of $KMnO_4$ in its reaction with an alkene is the test for unsaturation it is known as:

A. Markownikov test

B. Baeyer test

C. Wurtz test

D. Gringnard test

Answer: B

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2. A hydrocarbon reacts with hypochlorous acid to give 1-chloro-2-hydroxyethane. The hydrocarbon is

A. Ethylene

B. Methane

C. Ethane

D. Acetylene

Answer: A

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3. Reaction of HBr with propene in the presence of peroxide gives :-

A. Allyl bromide

B. n-propyl bromide

C. Isopropyl bromide

D. 3-bromo propane

Answer: B

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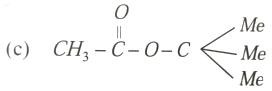
4. Indicate the organic structure for the product expected when 2-methylpropene is heated with acetyl chloride in the presence of anhydrous $ZnCl_2$.

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

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

C. 

D. $CH_3 - \overset{O}{\overset{||}{C}} - \overset{CH_3}{\overset{|}{C}} = CH_2$

Answer: A

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5. Baeyer's reagent is used in the laboratory for-

A. Detection of double bonds

B. Detection of glucose

C. Reduction

D. Oxidation

Answer: A

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6. When $3,3-$ dimethyl$-2-$ butanol is heated with H_2SO_4 the major product obtained is

A. Cis and trans isomers of 2,3-dimethyl -2-butene

B. 3,3-dimethyl-1-butene

C. 2,3-dimethyl-1-2-butene

D. 2,3-dimethyl-1-butene

Answer: C

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7. Alkene $R-CH=CH_2$ reacts readily with B_2H_6 and the product on oxidation with alkaline hydrogen peroxides produces

A. $R-CH_2-CHO$

B. $R-CH_2-CH_2-OH$

C. $R-\underset{\underset{O}{||}}{C}-CH_3$

D. $R - \underset{\underset{OH}{|}}{CH} - \underset{\underset{OH}{|}}{CH_3}$

Answer: B

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8. The reaction $CH_2 = CH - CH_3 - HBr \rightarrow CH_3CHBr - CH_3$ is

A. Nucleophilic reaction

B. Electrophilic reaction

C. Electrophilic reaction

D. Free radical addition

Answer: B

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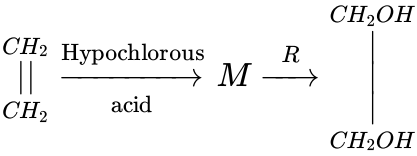
9. In the reactions



M and R are respectively

A. CH_3CH_2Cl and NaOH

B. $CH_2Cl - CH_2OH$ and aq. $NaHCO_3$

C. CH_3CH_2OH and HCl

D. $CH_2 = CH_2$ and heat

Answer: B

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10. The reaction, $CH_2 = CH_2 + H_2 \xrightarrow[250^\circ - 300^\circ C]{Ni} CH_3 - CH_3$ is called

A. Wurtz reaction

B. Kolbe reaction

C. Sabatier and Senderens reaction

D. Carbylamine reaction

Answer: C

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11. Which of the following is not used to distinguish ethene from ethane

A. Iodine in CCl_4

B. Bromine in CCl_4

C. Alkaline $KMnO_4$

D. Ammonical Cu_2Cl_2

Answer: D

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12. Using anhydrous $AlCl_3$ as catalyst, which one of the following reactions produces ethylbenzene $(PhEt)$?

A. $H_2C = CH_2 + C_6H_6$

B. $H_3C - CH_3 + C_6H_6$

C. $H_3C - CH_2OH + C_6H_6$

D. $CH_3 - CH = CH_2 + C_6H_6$

Answer: A

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13. Which of the compounds with molecular formula C_5H_{10}yields acetone on ozonolysis ?

A. 2-methyl-2-butene

B. 3-methyl-1-butene

C. Cyclopentane

D. 2 methyl-1-butane

Answer: A

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14. $H_3C - \underset{CH_3}{\underset{|}{CH}} - CH = CH_2 + HBr \rightarrow A$

A (Predominantly) is

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

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

C. $CH_3 - \underset{CH_3}{\underset{|}{CH}} - CH_2 - CH_2Br$

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

Answer: D

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15. In the following reaction

$$H_3C - \underset{CH_3}{\overset{CH_3}{\underset{|}{\overset{|}{C}}}} - CH = CH_2 \xrightarrow{H_2O/H^+} \underset{\text{Major Product}}{A} + \underset{\text{Minor Product}}{B}$$

The major product is

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

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

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

D. $H_3C - \underset{CH_3}{\overset{CH_3}{\underset{|}{\overset{|}{C}}}} - CH_2 - \underset{OH}{\underset{|}{CH_2}}$

Answer: A

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16. Identity Z in the sequence of reactions,

$$CH_3CH_2CH = CH_2 \xrightarrow{HBr/H_2O_2} Y \xrightarrow{C_2H_5ONa} Z$$

A. $CH_3(CH_2)_4 - O - CH_3$

B. $CH_3CH_2 - CH(CH_3) - O - CH_2CH_3$

C. $CH_3 - (CH_2)_3 - O - CH_2CH_3$

D. $(CH_3)_2CH_2 - O - CH_2CH_3$

Answer: B

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17. Identify Z in the series

$$CH_2 = CH_2 \xrightarrow{\text{HBr}} X \xrightarrow{\text{aq.KOH}} Y \xrightarrow[I_2\text{excess}]{Na_2CO_3} Z$$

A. C_2H_5I

B. C_2H_5OH

C. CHI_3

D. CH_3CHO

Answer: C

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18. In the following reaction

$$CH_3 - CH_2 - CH_2 - CH_3 \xrightarrow[475\ \mathrm{K}]{H_2SO_4}$$

A. $CH_3CH = CHCH_3$ predominates

B. $CH_2 = CHCH_2CH_3$ predominates

C. Both are formed in equal amounts

D. The amount of production depends on the nature of catalyst

Answer: A

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19. A compound 'X' on ozonolysis form two molecules of HCHO. Compound 'X' is

A. C_2H_4

B. C_2H_2

C. C_2H_6

D. C_6H_6

Answer: A

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20. The negative part of the addendum adds on to the carbon atom joined to the least number of hydrogen atoms. This statemet is called.

A. Thiele's principle

B. Baeyer's strain theory

C. Markownikov's rule

D. Peroxide effect

Answer: C

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21. Olefins can be hydrogenated by :

A. Zinc and HCl

B. Nascent hydrogen

C. Raney Ni and H_2

D. Lithium hydride in ether

Answer: C

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22. Which of the following is the most stable alkene

A. $R_2C = CR_2$

B. RCH=CHR

C. $RCH_2 = CH_2R$

D. $CH_2 = CH_2$

Answer: A

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23. Alkynes usually show which type of reaction ?

A. Addition

B. Substitution

C. Elimination

D. Superposition

Answer: A

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24. Which of the following compound is produced when $CH_2 = CH - (CH_2)_2COOH$ reacts with HBr in presence of peroxides

A. $CH_3CH(CH_2)_5COOH$

B. $BrCH_2CH_2(CH_2)_2COOH$

C. $CH_3CH_2CH_2(CH_2)_5COOH$

D. $CH_3CH_2BrCH_2CH_2COOH$

Answer: B

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25. 3-Phenylpropene on reaction with HBr gives (as major product)

A. $C_6H_5CH_2CH(Br)CH_3$

B. $C_6H_5CH(Br)CH_2CH_3$

C. $C_6H_5CH_2CH_2CH_2Br$

D. $C_6H_5CH(Br)CH=CH_2$

Answer: B

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26. Which of the following sequence of reactions (reagent) can be used for the conversion of $C_6H_5CH_2CH_3$ into $C_6H_5CH = CH_3$

A. $SOCl_2, H_2O$

B. $SO_2Cl_2, alc.\ KOH$

C. $Cl_2 / hv, H_2O$

D. $SOCl_2$, alc. KOH

Answer: B

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27. Ethylene is a member of .....series

A. Alkyne

B. Olefin

C. Paraffin

D. Amine

Answer: B

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28. Catalyst used in the dimerization of acetylene to prepare chloroprene is

A. $HgSO_4 + H_2SO_4$

B. Cu_2Cl_2

C. $Cu_2Cl_2 + NH_4Cl$

D. $Cu_2Cl_2 + NH_4OH$

Answer: C

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29. Presence of peroxides affects the addition of

A. HBr

B. HCl

C. HI

D. All of these

Answer: A

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30. 1,3-butadiene reacts with ethylene to form

A. Benzene

B. Cyclohexane

C. Cyclohexene

D. 2, 3 dimethyl butane

Answer: C

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31. In the reaction $C_2H_5CH = CH_2 + H - X \rightarrow$ Product. What is the product

A. $C_2H_5 - CH_3$

B. $C_2H_5CH_2 - CH_2X$

C. $C_2H_5 - CHX - CH_3$

D. $CH_3 - CH_2X - CH = CH_2$

Answer: C

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32. $(CH_3)_2C - \underset{CH_3}{\underset{|}{C}}H \xrightarrow[H_2]{\text{Catalyst}}$ Optical isomers

A. 2

B. 4

C. Zero

D. 3

Answer: C

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33. Which reagent used to test unsaturation of alkenes ?

A. Conc. H_2SO_4

B. Ammoniacal Cu_2Cl_2

C. Ammoniacal $AgNO_3$

D. Solution of Br_2 in CCl_4

Answer: D

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34. In paraffins, with the increasing molecular weight, it is found that

A. Freezing point decreases

B. Boiling point decreases

C. Boiling point increases

D. Vapour pressure decreases

Answer: C

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35. In a reaction, if half of the double bond is broken and two new bonds are formed, this is a case of

A. Elimination

B. Addition

C. Displacement

D. Rearrangement

Answer: B

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36. The formation of alkene from alkyl halide is an example of

A. Addition

B. Elimination

C. Substitution

D. (a) and (c)

Answer: B

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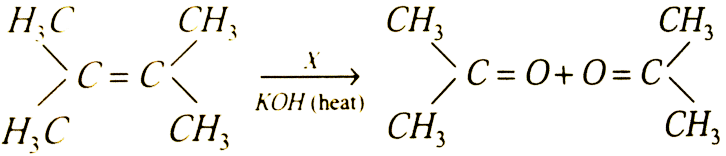
37.



X in the above reaction is

A. HNO_3

B. O_2

C. O_3

D. $KMnO_4$

Answer: D

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38. Electrolysis of cold concentrated aqueous solution of potassium succinate yields

A. Ethane

B. Ethyne

C. Ethene

D. Ethane-1, 2-diol

Answer: C

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39. $CH_2 = CHCl$ reacts with HCl to form

A. $CH_2Cl - CH_2Cl$

B. $CH_3 - CHCl_2$

C. $CH_2 = CHCl.\ HCl$

D. None of these

Answer: B

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40. $CH_2 = CH_2 \xrightarrow[KOH / H_2O]{KMnO_4} X$. Product 'X' in above reaction is

A. Ethylene glycol

B. Glucose

C. Ethanol

D. All of these

Answer: A

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41. Ethyl hydrogen sulphate is obtained by the reaction of H_2SO_4 on

A. Ethylene

B. Ethane

C. Ethyl chloride

D. Ethanol

Answer: D

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42. A gas decolourises $KMnO_4$ solution but gives no precipitate with ammoniacal cuprous chloride is

A. Ethane

B. Methane

C. Ethene

D. Acetylene

Answer: C

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43. Cyclopentene on treatment with alkaline $KMnO_4$ gives

A. Cyclopentanol

B. Trans 1, 2-cyclopentanediol

C. Cis 1, 2-cyclopentanediol

D. 1 : 1 mixture of cis and trans 1, 2-cyclopentanediol

Answer: C

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44. Which one of the following organic compounds decolourizes an alkaline $KMnO_4$ solution

A. CS_2

B. C_3H_6

C. C_3H_8

D. CH_3OH

Answer: B

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45. Addition of HI on the double bond of propene yields isopropyl iodide and not n-propyl iodide as the major product. This is because the addition proceeds through:

A. A more stable carbonium ion

B. A more stable carbanion

C. A more stable free radical

D. None of the above being a concerted reaction

Answer: A

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46. When alocoholic solution of ethylene dibromide is heated with granulated zinc, the compound formed is

A. Ethylene

B. Ethyne

C. Cyclobutane

D. Butane

Answer: A

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47. If HCl is added over $CH_2 = C \begin{matrix} CH_3 \\ CH_3 \end{matrix}$ then what is formed

A. (a) $CH_2 = C(Cl) \begin{matrix} CH_3 \\ CH_3 \end{matrix}$

B. (b) $CH_3 - C(Cl)(CH_3)(CH_3)$

C. (c) $CH_2 = C \begin{matrix} CH_3 \\ CH_2Cl \end{matrix}$

D. None of these

Answer: B

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48. Propene when heated with chlorine at about 500° C forms

A. $CH_2Cl.CH=CH_2$

B. $CH_3.CHCl.CH_2Cl$

C. $CH_2Cl.CHCl.CH_2Cl$

D. All of three

Answer: A

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49. Electrophilic addition reaction is easily given by

A. Acetylene

B. Ethene

C. Ethane

D. Benzene

Answer: B

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50. The only alcohol that can be prepared by the indirect hydration of alkene is

A. Ethyl alcohol

B. Propyl alcohol

C. Isobutyl alcohol

D. Methyl alcohol

Answer: A

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51. Which reactions are most common in alkenes ?

A. Electrophilic substitution reactions

B. Nucleophilic substitution reactions

C. Electrophilic addition reactions

D. Nucleophilic addition reactions

Answer: C

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52. Oils are converted into fats by

A. Hydration

B. Decarboxylation

C. Hydrogenation

D. Dehydrogenation

Answer: C

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53. One mole of an unsaturated hydrocarbons on ozonolysis gives one mole each of CH_3CHO, $HCHO$ and $OHC - CHO$. The hydrocarbon is:

A. $CH_3.CH_2C \equiv C.CH_3$

B. $CH \equiv C.CH_2.CH_2.CH_3$

C. $CH_3.CH = CH.CH = CH_2$

D. $CH_2 = CH.CH_2CH \equiv CH_2$

Answer: C

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54. The Markovnikov rule is best applicable to the reaction between

A. $C_2H_4 + HCl$

B. $C_3H_6 + Br_2$

C. $C_3H_6 + HBr$

D. $C_3H_8 + Cl_2$

Answer: C

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55. The addition of Br_2 to (E)-but-2-ene gives

A. (R,R)-2-3-dibromobutane

B. (S,S)-2,3- dibromobutane

C. (R,S)-2,3- dibromobutane

D. A mixture of (R,R) and (S,S-2,3)- dibromobutane

Answer: C

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56. An alkene on reductive ozonolysis gives two molecules of $CH_2(CHO)_2$. The alkene is:

A. 2,4-hexadiene

B. 1,3-cyclohexadiene

C. 1,4-cyclohexadiene

D. 1-methyl-1, 3-cyclopentadiene

Answer: C

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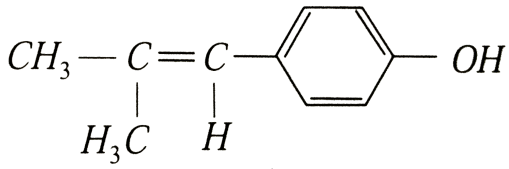
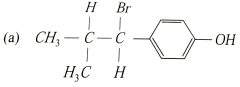
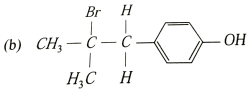
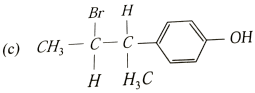
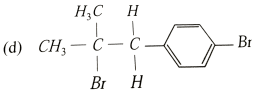
57. The reaction of  with HBr gives predominantly

A. 

B. 

C. 

D. 

Answer: A

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58. The alkene that will give the same product with HBr in the presence as well as in the presence of peroxide is

A. 2-butene

B. 1-butene

C. Propene

D. 1-hexene

Answer: A

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59. One mole of a symmetrical alkene on ozonolysis gives two moles of an aldehyde having a molecular mass of 44u. The alkene is:

A. Ethene

B. Propene

C. 1-butene

D. 2-butene

Answer: D

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60. One mole of propanone and one mole of formaldehyde are the products of ozonolysis of one mole of an alkene. The alkene may be

A. 2-methylpropene

B. 2,2-dimethyl-1-butene

C. Propene

D. 2-butene

Answer: A

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61. When HBr adds on hex-1-ene in the presence of benzoyl peroxide, the product is

A. 2-bromohexane

B. 2,3-dibromohexane

C. 1.2-dibromohexane

D. 1-bromohexane

Answer: D

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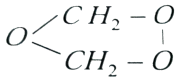
62. Ethylene reacts with ozone gas to form the compound

A. HCHO

B. C_2H_5OH

C. (c) 

D. CH_3CHO

Answer: C

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63. Which of the following gives on ozonolysis both aldehydes and ketones?

A. $Me_2C = CHMe$

B. $Me_2C = CMe_2$

C. $MeCH_2 - C(Me) = CMe_2$

D. $MeCH(Me) - CH - CHMe$

Answer: A

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64. The compounds that will give an isomer of 2, 2-dimethyl propane on catalytic hydrogenation are

(1) $CH_3CH = \underset{\underset{CH_3}{|}}{C} - CH_3$

(2) $CH_3CH = CHCH_3$

(3) $CH_3CH = CHCH_3$

(4) $CH_3\underset{\underset{CH_3}{|}}{C} = \underset{\underset{CH_3}{|}}{C} - CH_3$

A. 1 and 4

B. 2 and 4

C. 1 and 3

D. 1 and 2

Answer: C

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65. 2-chlorobutane is heated with alcoholic NaOH, the product formed in larger amount is

A. 1-butene

B. 1-butyne

C. 2-butene

D. All of these

Answer: C

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66. In the following reactions,

$RCH_2CH = CH_2 + (ICl) \rightarrow (A)$

Markownikoff's product (A) is:

A. $RCH_2\underset{Cl}{\underset{|}{C}}H - CH_2I$

B. $RCH_2 - \underset{I}{\underset{|}{C}}H - CH_2Cl$

C. $RCH - \underset{I}{\underset{|}{C}}H = CH_2$

D. $RCH = CH - CH_2I$

Answer: A

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67. The order of reactivity of alkenes , $\underset{(I)}{(CH_3)_2C} = CH_2, \underset{(II)}{CH_3CH} = CH_2, \underset{(III)}{CH_2 = CH_2}$ when subjected to acid catalyzed hydration is

A. $I > II > III$

B. $I > III > II$

C. $III > II > I$

D. $II > I > III$

Answer: A

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68. The product of following reaction is

$$CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}} - CH = CH_2 \xrightarrow[(ii)\, NaBH_4]{(i)\, Hg(OAc)_2, H_2O}$$

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

B. $CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}} - CH_2 - CH_2OH$

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

D. $HOCH_2 - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}} - CH_2 - CH_3$

Answer: A

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69. Conjugated double bond is present in:

A. Propylene

B. Butadiene

C. Isobutylene

D. Butylene

Answer: B

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70. Ethene gives with acidic $KMnO_4$ solution

A. Ethylene glycol

B. Ethylene oxide

C. Formaldehyde

D. Acetaldehyde

Answer: C

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71. In the reaction

$$CH_3CH=CH_2+H_2O+[O]\xrightarrow[\text{Acid}]{KMnO_4}CH_3-\underset{OH}{\underset{|}{CH}}-\underset{OH}{\underset{|}{CH_2}}\xrightarrow{[O]}X+HCO$$

X is

A. CH_3CH_2COOH

B. CH_3COOH

C. CH_3CH_2CHO

D. CH_3CH_2OH

Answer: B

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72. Which doesn't follow Markovnikov's rule

A. $CH_3 - CH = CH_2$

B. $CH_3CH = CHCH_3$

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

D. $CH_3 - CH_2 - CH = CH_2$

Answer: B

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73. The ozonolysis of $> C = C <$ produces

A. $> C = O + O = C <$

B. $> C = O = O$

C. (c) $\rightarrow C - \overset{H}{\underset{|}{C}} = O$

D. (d) $\rightarrow C - OH + CO_2$

Answer: A

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74. How many gm of bromine will react with 21 gm C_3H_6

A. 80

B. 160

C. 240

D. 320

Answer: A

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75. The order of increasing reactivity towards HCI of the following compounds will be

(1)$CH_2 = CH_2$

(2)$(CH_3)_2C = CH_2$

(3)$CH_3CH = CHCH_3$

A. $1 < 2 < 3$

B. $1 < 3 < 2$

C. $3 < 2 < 1$

D. $2 < 1 < 3$

Answer: C

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76. Bond length between carbon-carbon in ethylene molecule is

A. 1.54 Å

B. 1.35 Å

C. 1.19 Å

D. 2.4 Å

Answer: B

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77. Which of the following alkenes gives only acetic acid on oxidation with potassium permanganate solution

A. Ethylene

B. 1-butene

C. Propene

D. 2-butene

Answer: C

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78. Which of the following reactions can be used for the synthesis of an alkene

A. Chugaev reaction

B. Dakin reaction

C. Reimer-Tiemann reaction

D. Wurtz-Fittig reaction

Answer: A

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79. Towards electrophilic reagents

A. Ethene is more reactive than ethyne

B. Ethene is less reactive than ethyne

C. Both have equal reactivity

D. The reactivity of both cannot be predicted

Answer: A

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80. In the following reaction $2CH_2 = CH_2 + S_2Cl_2 \rightarrow$ Prouduct . The Product is

A. Mustard gas

B. Lewisite

C. Polythene

D. Teflon

Answer: A

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81. The which is not used as gaseous fuel :

A. Gasoline

B. Acetylene

C. Carbon monoxide

D. Methane

Answer: A

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82. A hydrocarbon containing 2 carbon atoms gives Sabatier and Senderens reaction but does not give precipitate with ammoniacal silver nitrate solution. The hydrocarbon in the question is

A. Ethane

B. Acetylene

C. Ethylene

D. None of these

Answer: C

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83. Ethene when treated with Br_2 in the presence of CCl_4 which compund is formed

A. 1,2-dibromoethane

B. 1-bromo-2-chloroethane

C. Both (a) and (b)

D. 1,1,1-tribromoethane

Answer: A

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84. Alkene can be prepared from alkyl halide by the following reagent

$R - X + Nu^- \rightarrow$ Alkene + NuH

A. Alc. KOH heat

B. Aq. KOH + cold water

C. NaOH

D. LiOH

Answer: A

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85. Position of double bond in an organic compound is determined by

A. Ozonolysis

B. Oxidation

C. Reduction

D. Hydrogenation

Answer: A

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86. The test for unsaturation is confirmed by the decolourisation of which of the following

A. iodine water

B. $CuSO_4$ solution

C. Bromine water

D. All of these

Answer: C

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87. 1-Butene may be converted to butane by reaction with :

A. Zn-HCl

B. Sn-HCl

C. Zn-Hg

D. Pb / H_2

Answer: D

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88. Reaction of one molecule of HBr with one molecule of 1,3-butadiene at 40° C gives predominantly.

A. 3-bromobutane under kinetically controlled conditions

B. 1-bromo-2-butene under thermodynamically controlled conditions

C. 3-bromobutane under thermodynamically controlled conditions

D. 1-bromo-2-butene under kinetically controlled conditions

Answer: B

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89. In the following sequence of reactions, the alkene affords the compound 'B'

$CH_3CH_2CH = CHCH_2CH_3 \xrightarrow{O_2} A \xrightarrow[Zn]{H_2O} B$

The compound B is :

A. CH_3COCH_3

B. $CH_3CH_2COCH_3$

C. CH_3CHO

D. CH_3CH_2CHO

Answer: D

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90. Hydroboration oxidation of 4-methyl octene would give

A. 4 methyloctanol

B. 2-methyldecane

C. 4-methylheptanol

D. 4-methyl-2-octanone

Answer: A

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91. Markownikoff rule provides guidance of addition of HBr

A. $CH_2 = CH_2$

B. $CH_3 - CH_2 - CH_3$

C. $CH_3CH = CHCH_3$

D. $CH_2 = CHBr$

Answer: D

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92. Which decolourize aqueous bromine and gives white fumes of HCl on reaction with PCl_5

A. $CH_3COCH_2CH = CH_2$

B. $CH_3CH_2CH_2CH_2CH_3$

C. $CH_3CH = CHCH_2CH_2OH$

D. $CH_3OCH_2CH_2CH_2CH_2OH$

Answer: C

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93. PCI_5 reacts with propanone, to give

A. Vie dichloride

B. Propanal

C. Propane-chloride

D. Gem-dichloride

Answer: D

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94. In the following reaction, A and B respectively.

are, $A \xrightarrow{HBr} C_2H_5Br \xrightarrow{B} A$

A. $C_2H_4, alc.\ KOH / \Delta$

B. $C_2H_5Cl, aqKOH / \Delta$

C. $CH_3OH, aq.\ KOH / \Delta$

D. C_2H_2, PBr_3

Answer: A

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95. When $2-$ bromobutane reacts with alcoholic $KOH,$ the reaction is called

A. Halogenation

B. Hydrogenation

C. Chlorination

D. Dehydro-halogenation

Answer: D

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96. The additon of HBr to 2-pentene gives

A. 2-bromopentane only

B. 3-bromopentane only

C. 2-bromopentane and 3-bromopentane

D. 1-bromopentane and 3-bromopentane

Answer: C

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97. An alkyne combines with a conjugated diene to give an unconjugated cycloalkadiene. The most likely title of this reaction is

A. Schotten-Baumann reaction

B. Hofmann-Bromasmide reaction

C. Pinacol- Pinacolone rearrangement

D. Diels-Alder reaction

Answer: D

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98. An alkene gives two moles of $HCHO$, one mole of CO_2 and one mole of CH_3COCHO on ozonolysis. The structure of alkene is

A. $CH_2 = C = CH - CH_2 - CH_3$

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

C. $CH_2 = C = \underset{\underset{CH_3}{|}}{C} - CH_3$

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

Answer: D

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99. Cyclohexene on reaction with OsO_4 followed by reaction with $NaHSO_3$ gives:

A. Cis-diol

B. Trans-diol

C. Epoxy

D. Alcohol

Answer: A

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100. Ethylene has high b.p. and high vapour pressure at $100^{\circ}C$ and does not dissolve in water. Hence ethylene is separated by this method

A. Simple distillation

B. Vacuum distillation

C. Vapour distillation

D. Alkali treatment

Answer: C

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101. Ethylene is converted to X on passing through a mixture of acidified aqueous solution of palladium chloride and cupric chloride. Which of the following reagents readily takes part addition reaction with X

A. Br_2

B. HBr

C. HCl

D. HCN

Answer: D

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102. Addition of HCl does not obey anti-Markovnikov's rule because

A. It is a strong acid

B. It is a gas

C. Its bond energy is high

D. Its bond energy is less

Answer: C

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103. Correct statement about 1.3-dibutene:

A. Conjugated double bonds are present

B. Reacts with HBr

C. Forms polymer

D. All of these

Answer: D

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104. Which of the following compounds represents acrylonitrile

A. Vinyl cyanide

B. Cyanoethene

C. Prop-2-ene nitrile

D. All of them

Answer: D

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105. A hgydrocarbon X adds on one mole of hydrogen to gives another hydrocarbon and also decolourises bromine water.X reacts with $KMnO_4$ in presenece of acid to give two moles of the same carboxylic acid.The structure of X is:

A. $CH_2 = CH - CH_2CH_2CH_3$

B. $CH_3CH_2CH_2 - CH = CHCH_3$

C. $CH_3CH_2CH = CHCH_2CH_3$

D. $CH_3CH = CHCH_2CH_2CH_3$

Answer: C

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106. The most reactive hydrocarbon is

A. Ethane

B. Ethyne

C. Ethene

D. Methane

Answer: C

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107. Which one is an unsaturated compound

A. C_6H_{14}

B. C_4H_8

C. C_3H_7OH

D. CH_3OH

Answer: B

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108. An alkene, on ozonolysis gives formaldehyde and acetaldehyde. The alkene is :

A. Ethene

B. Propene

C. 1-butene

D. 2-butene

Answer: B

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109. $CH_3CHO = CHCHO$ is oxidized to $CH_3CH = CHCOOH$ using

A. Alkaline potassium permanganate

B. Acidified potassium permanganate

C. Selenium dioxide

D. Osmium tetroxide

Answer: B

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110. Which of the following hydrocarbons cannot be obtained Sabatier and Senderens reaction

A. CH_4

B. C_2H_6

C. C_3H_8

D. All

Answer: A

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111. Which one of the following characteristics apply to both ethene and ethyne

A. Explode when mixed with chlorine

B. Decolourise Baeyer's reagent giving brown precipitate

C. Rapidly absorbed by cold conc H_2SO_4

D. Form white precipitate with silver nitrate solution

Answer: B

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112. A mixture of $1-$ chloropropane and $2-$ chloropropane when treated with alcoholic KOH, it gives

A. 1-propene

B. 2-propene

C. Isopropyl

D. All the three

Answer: A

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113. When ethene is heated at 400° C Under high pressure, the product is are

A. Carbon and H_2

B. Polyethylene

C. Acetylene and H_2

D. None of these

Answer: B

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114. Paraffins are soluble in

A. Distilled water

B. Benzene

C. Methanol

D. Sea water

Answer: B

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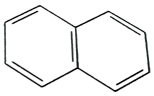
115. The compound most likely to decolourize a solution of potassium permanganate is

A. CH_3CH_3

B. (b) 

C. $CH_3CH = CHCH_2CH_3$

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

Answer: C

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116. Reaction of Br_2 on ethylene in presence of NaCl gives

A. $BrCH_2 - CH_2Br$

B. $ClCH_2 - CH_2Br$

C. Both (a) and (b)

D. None of these

Answer: C

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117. The final product formed by the ozonolysis of compound $RCH = CR_2$ is

A. RCHO

B. R_2CO

C. Both (a) and (b)

D. None of these

Answer: C

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118. The compound B formed in the following sequences of reactions is $CH_3CH_2CH_2OH \xrightarrow{PCl_3} A \xrightarrow{\text{alco.KOH}} B$

A. Propyne

B. Propene

C. Propanol

D. Propane

Answer: B

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119. Deviation from Markovnikov's rule occurs in presence of

A. Zinc

B. Peroxides

C. Hg-Zn/HCl

D. All of these

Answer: B

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120. On passing vapours of an organic liquid over finely divided Cu at 573K the product was an alkene. This reaction is

A. Catalytic oxidation of primary alcohol

B. Catalytic dehydrogenation of secondary alcohol

C. Catalytic dehydrogenation of tertiary alcohol

D. Catalytic dehydration of tertiary alcohol

Answer: D

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121. The total number of sigma (σ) and pi (π) bonds in an ethylene molecule are

A. $4\sigma, 2\pi$

B. $4\sigma, 1\pi$

C. $5\sigma, 2\pi$

D. $5\sigma, 1\pi$

Answer: D

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122. Which of the following aliphatic compounds will discharge red colour of bromine

A. C_2H_4

B. C_3H_6

C. C_4H_8

D. All of these

Answer: D

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123. Which of the following is the most stable

A. 1-butene

B. 2-butene

C. 1-pentene

D. 2-pentene

Answer: D

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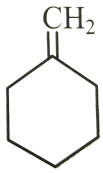
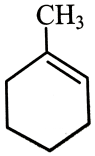
124. In the reaction with HCl, an alkene reacts in accordance with Markownikoff's rule to give a product 1-chloro-1-methylcyclohexane. The possible alkene is:

A.

(a) 

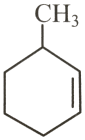
(b)



B.

C. (a) and (b)

(d)



D.

Answer: C

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125. $2,3-$ Dimethyl$-2-$ butene can be prepared by heating which of the following compounds with a strong acid ?

A. $(CH_3)_2CH-\underset{\underset{CH_3}{|}}{C}H-CH=CH_2$

B. $(CH_3)_3C-CH=CH_2$

C. $(CH_3)_2C=CH-CH_2-CH_3$

D. $(CH_3)_2CH-CH_2-CH=CH_2$

Answer: B

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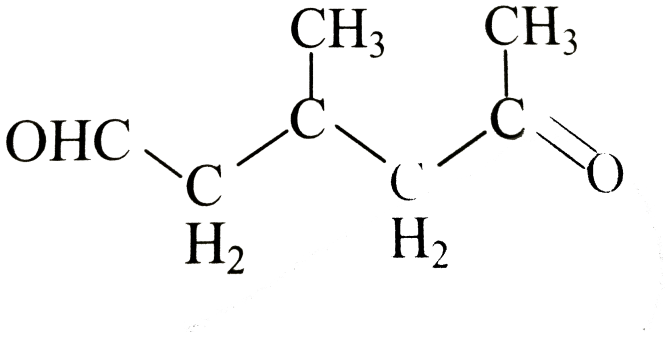
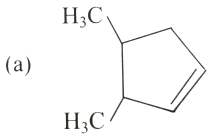
126. A single compound of the structure

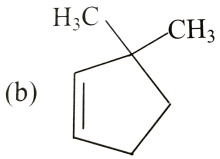


is obtainable from ozonolysis of which of the following cyclic compounds

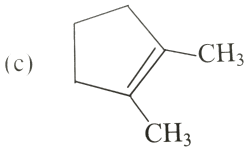
A.



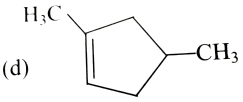
B.



C.



D.



Answer: D

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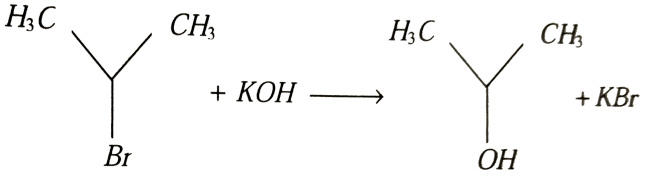
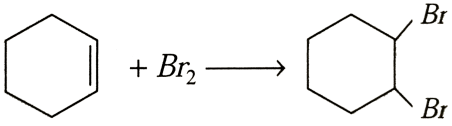
127. For the following reactions

(A) $CH_3CH_2CH_2Br + KOH \rightarrow CH_3CH = CH_2 + KBr + H_2O$

(B)



(C)



Which of the following statements is correct

A. (A) and (B) are elimination reaction and (C) is addition reaction

B. (A) is elimination , (B) is substitution and (C) is addition reaction

C. (A) is elimination , (B) and (C)are substitution reactions

D. (A) is substitution , (B) and (C) are addition reacton

Answer: B

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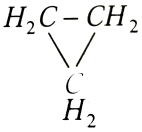
128. Which of the following compounds shall not produce propene by reaction with HBr followed by elimination or direct only elimination reaction?

A. $H_3C - \overset{H_2}{C} - CH_2Br$

(b)

B. 

C. $H_3C - \overset{H_2}{C} - CH_2OH$

D. $H_2C = C = O$

Answer: D

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129. Predict the correct intermediate and product in the following reaction.

$$H_3C - C \equiv CH \xrightarrow[HgSO_4]{H_2O, H_2SO_4}$$

$$\underset{(A)}{\text{Intermediate}} \rightarrow \underset{(B)}{\text{Product}}$$

A. $A: H_3C - \underset{\underset{OH}{|}}{C} = CH_2 \quad B: H_3C - \underset{\underset{SO_4}{|}}{C} = CH_2$

B. $A: H_3C - \underset{\underset{O}{||}}{C} = CH_3 \quad B: H_3C - C \equiv CH$

C. $A: H_3C - \underset{\underset{OH}{|}}{C} = CH_2 \quad B: H_3C - \underset{\underset{O}{||}}{C} - CH_3$

D. $A: H_3C - \underset{\underset{SO_4}{|}}{C} = CH_2 \quad B: H_3C - \underset{\underset{O}{||}}{C} = CH_3$

Answer: C

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ORDINARY THINKING (Objective question) (ALKYNE)

1. Carbon-carbon bond length is minimum in

A. Ethane

B. Ethene

C. Ethyne

D. Benzene

Answer: C

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2. Acetylenic hydrocarbons are acidic because

A. Sima electron density of C-H Bond in acetylene is nearer to carbon, which has 50% s character

B. Acetylene has only one hydrogen on each carbon

C. Acetylene contains least number of hydrogen among the possible hydrocarbons having two carbons

D. Acetylene belongs to the class of alkynes with molecular formula C_nH_{2n-2}

Answer: A

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3. Which is the most suitable reagent among the following to distinguish compound (iii) from the rest of the compounds

i. $CH_3 - C \equiv C - CH_3$

ii. $CH_3 - CH_2 - CH_2 - CH_3$

iii. $CH_3 - CH_2 - C \equiv CH$

iv. $CH_3 - CH = CH_2$

A. Bromine in carbon tetrachloride

B. Bromine in acetic acid

C. Alkaline $KMnO_4$

D. Ammoniacal silver nitrate reagent

Answer: D

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4. $R - CH_2 - CCl_2 - R \xrightarrow{Reagent} R - C \equiv C - R$

The reagent is

A. Na

B. HCl and H_2O

C. KOH in C_2H_5OH

D. Zn

Answer: C

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5. When treated with ammoniacal cuprous chloride, which one among the following forms copper derivative

A. C_2H_6

B. C_2H_4

C. C_2H_2

D. C_6H_6

Answer: C

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6. Calcium carbide on reacting with water gives

A. Methane

B. Ethane

C. Ethene

D. Acetylene

Answer: D

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7. The bond length between sp^3 hybridised carbon atom and other carbon atom is minimum in

A. Propane

B. Butane

C. Propene

D. Propyne

Answer: D

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8. The triple bond in ethyne is made of

A. Three σ-bonds

B. Three π-bonds

C. Two σ and one π-bond

D. Two π and one σ -bond

Answer: D

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9. The cylindrical shape of alkynes is due to

A. Three σ-bonds

B. Three π-bonds

C. Two σ and one π-bond

D. Two π and one σ -bond

Answer: D

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10. Identify the product D in the following series of reaction

$$CH_3COOH \xrightarrow{LiAlH_4} A \xrightarrow[443\ K]{H^+} B \xrightarrow{Br_2} C \xrightarrow[KOH]{alc.} D$$

A. Methane

B. Alcohol

C. Acetylene

D. Benzaldehyde

Answer: C

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11. The products of the following reactions

$$CH_3C \equiv CCH_2CH_3 \xrightarrow[oxidation]{O_3}$$ are

A. $CH_3CHO + CH_3CH_2CHO$

B. $CH_3COOH + CH_3CH_2CHO$

C. $CH_3COOH + HOOCCH_2CH_3$

D. $CH_3COOH + CO_2$

Answer: C

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

$$CH_3CH_2C \equiv CH + HCl \rightarrow B \xrightarrow{HI} C$$

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

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

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

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

Answer: D

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13. Which of the following reagents will be able to distinguish between $1-$ butyne and $2-$ butyne ?

A. $NaNH_2$

B. HCl

C. O_2

D. Br_2

Answer: A

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14. Which of the following organic compounds has same hybridization as its combustion product (CO_2)?

A. Ethene

B. Ethanol

C. Ethane

D. Ethyne

Answer: D

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15. Hydrocarbon contianing following bond is most reactive

A. $C \equiv C$

B. $C = C$

C. $C - C$

D. All of these

Answer: A

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16. What happens when a mixture of acetylene and hydrogen is passed over heated Lindlar's catalyst

A. Ethane and water are formed

B. Ethylene is formed

C. Acetylene and ethane are formed

D. None of these

Answer: B

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17. $CH \equiv CH \xrightarrow{O_3 / NaOH} X \xrightarrow{Zn / CH_3COOH} Y$. Y is

A. $\begin{matrix} CH_2OH \\ | \\ CH_2OH \end{matrix}$

B. CH_3CH_2OH

C. CH_3COOH

D. CH_3OH

Answer: A

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18. 1-Butyne reacts with cold alkaline $KMnO_4$ to produce

A. CH_3CH_2COOH

B. $CH_3CH_2CH_2COOH$

C. $CH_3CH_2COOH + CO_2$

D. $CH_3CH_2COOH + HCOOH$

Answer: C

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19. Which of the following reacts with sodium with the elimination of hydrogen

A. CH_4

B. C_2H_6

C. C_2H_4

D. C_2H_2

Answer: D

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20. Acetylene is obtained by the electrolysis of

A. Sodium succinate

B. Potassium fumarate

C. Both (a) and (b)

D. None of these

Answer: B

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21. The product formed when acetylene is passed through red hot tube is

A. Benzene

B. Cyclohexane

C. Neoprene

D. Ethane

Answer: A

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22. Which of the following is an electrophile

A. H_2O

B. NH_3

C. $AlCl_3$

D. $C_2H_5NH_2$

Answer: C

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23. $HC \equiv CH$ reacts with acetic acid in the presence of Hg^{2g+} ions to give

A. $\begin{matrix} CH_3 \\ | \\ CH(CH_3COO)_2 \end{matrix}$

B. $\begin{matrix} | \\ CH(CH_3COO)_2 \end{matrix}$

C. $\begin{matrix} CH_3 \\ | \\ CH_2(CH_3COO) \end{matrix}$

D. None of these

Answer: A

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24. Simplest alkyne is represented by

A. CH

B. CH_2

C. C_2H_2

D. C_2H_4

Answer: C

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25. On cracking petrol, we get

A. CH_4

B. C_3H_6

C. Both (a) and (b)

D. $CH_3 + CH_4 + C_2H_6$+alcohols

Answer: C

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26. Acetylene reacts with ammonical silver nitrate to form

A. Silver acetylene

B. Silver acetate

C. Metal silver

D. Silver mirror

Answer: A

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27. Acetylene gives

A. White precipitate with $AgNO_3$ and red precipitate with Cu_2Cl

B. White precipitate with Cu_2Cl_2 and red precipitate with $AgNO_3$

C. White precipitate with both the reagents

D. Red precipitate with both the reagents

Answer: A

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28. Acetylene is prepared industrially by passing electric discharge through graphite electrodes in the atmosphere of

A. Air

B. N_2

C. H_2

D. CO_2

Answer: C

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29. Acetylene can be prepared from

A. Potassium fumarate

B. Calcuim carbide

C. Ethylene bromide

D. All of these

Answer: D

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30. A mixture of ethane, ethene and ethyne is passed through ammoniacal $AgNO_3$ solution. The gases which contain unreacted are

A. Ethane and ethene

B. Ethane and ethyne

C. Ethene and ethyne

D. Ethane only

Answer: A

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31. Which of the following gases is used for the welding

A. Methane

B. Ethane

C. Acetylene

D. Ethene

Answer: C

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32. Distinction in pentene-1 and pentyne-1 is done by

A. $\left[Ag(NH_3)_2\right]^+$

B. Conc. H_2SO_4

C. HCl

D. Br_2

Answer: A

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33. The poisonous gas that comes out with petrol burning in a car is

A. CH_4

B. C_2H_6

C. CO_2

D. CO

Answer: D

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34. propyne on polymerisation gives

A. Mesitylene

B. Benzene

C. Ethyl benzene

D. propyl benzene

Answer: A

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35. Which of the following catalyst is used in the polymerisation of $CH \equiv CH$ to C_6H_6

A. $AlCl_3$

B. $HgSO_4$

C. $NbCl_3$

D. HCl

Answer: A

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36. $KMnO_4$ will oxidised acetylene to

A. Ethylene glycol

B. Ethyl alcohol

C. Oxalic acid

D. Acetic acid

Answer: C

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37. Cetane is a compound which has very good ignition property. Chemically it is

A. $CH_3(CH_2)_{14}CH_3$

B. $(CH_3)_3C(CH_2)_{11}CH_3$

C. $C_{17}H_{34}$

D. None of these

Answer: A

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38. Which of the following will be the final product when C_2H_2 reacts with HCl

A. $\begin{matrix} CH \\ \| \\ CHCl \end{matrix}$

B. $\begin{matrix} CH_3 \\ | \\ CHCl_2 \end{matrix}$

C. 

D. None of these

Answer: B

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39. Acetylene adds on to HCN give

A. Acetylene cyanide

B. Cyano acetylene

C. Vinyl ethene

D. Acrylonitrile

Answer: D

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40. When acetylene reacts with arsenic trichloride in the presence of anhydous aluminium chloride, it produces

A. Lewisite

B. β-Chlorovinyl dichloroarisine

C. Nitrobenzene

D. Both (a) and (b)

Answer: D

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41. The hybridisation state of carbon in fullerence is

A. sp

B. sp^2

C. sp^3

D. sp^3d

Answer: B

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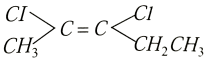
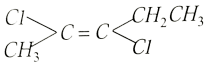
42. What is the major product of the following reaction

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

A. (a) 

B. $CH_3 - CH_2 - \overset{\overset{Cl}{|}}{\underset{\underset{Cl}{|}}{C}} - CH_2CH_3$

C. (c) 

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

Answer: D

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43. $1, 2 -$ dibromoethane when heated with alcohilic potash gives

A. Ethane

B. Acetylene

C. Ethylene

D. Methane

Answer: B

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44. Which among the following will give a precipitate with ammonical silver nitrate

A. 2-butene

B. 2-butyne

C. Chlorobenzene

D. 3-methyl-1-butyne

Answer: D

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45. Which will undergo reaction with ammonical $AgNO_3$

A. (a) $\begin{matrix} CH_3 \\ CH_3 \end{matrix} > CH - CH_2 - CH = CH - CH_3$

B. $CH_3 - CH = CH - C \equiv CH$

C. $CH_3 - CH_2 - CH = CH - CH_2 - CH_3$

D. $CH_2 = CH - CH_2 - CH_3$

Answer: B

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46. Which compound will react with an aqueous solution of $Ag(NH_3)_2^+ OH^-$

A. $CH_2 = CH_2$

B. $CH_3 - CH_2$

C. $CH_3CH_2C \equiv CH$

D. $CH_3 - C \equiv C - CH_3$

Answer: C

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47. $CH_2 = CH_2 \xrightarrow{Br_2 / H_2O} A$, In the above reaction the compound A is

A. Ethylene bromohydrin

B. 1,2-dibromo ethane

C. Ethanol

D. None of these

Answer: A

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48. $CH \equiv CH \xrightarrow[H_2SO_4]{HgSO_4} \xrightarrow[H_2O]{CH_3MgBr} \xrightarrow{P/Br_2}$

A. $CH_3CH(Br)CH_3$

B. $CH_3CH_2CH_2Br$

C. $CH_2 = CH - Br$

D. $BrCH = CH - CH_3$

Answer: A

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49. The number of π-bonds in the product formed by passing acetylene through dilute sulphuric acid containing mercuric sulphate is

A. Zero

B. One

C. Two

D. Three

Answer: B

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50. Which of the following compounds have more than one type of hybridisation for carbon?

(i) $HC \equiv CH$

(ii) $CH_2 = CH - C \equiv CH$

(iii) $CH_3CH = CHCH_3$

(iv) $CH_3CH_2CH_2CH_3$

A. (ii) and (iii)

B. (ii)

C. (iii) and (iv)

D. (iv)

Answer: A

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51. The homologue of ethyne is

A. C_2H_4

B. C_2H_6

C. C_3H_8

D. C_3H_4

Answer: D

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52. Identify the alkyne in the followin sequence of reactions

$$\text{Alkyne} \xrightarrow[\text{Lindlar catalyst}]{H_2} A \xrightarrow{\text{Ozonolysis}} B$$

$$\text{Catalyst} \xrightarrow[\text{Process}]{\text{Wacker}} CH_2 = CH_2$$

A. $H_3C - C \equiv C - CH_3$

B. $H_3C - CH_2 - C \equiv CH$

C. $H_2C = CH - C \equiv CH$

D. $HC \equiv C - CH_2 - C \equiv CH$

Answer: A

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53. Which of the following reactions is shown by alkynes

A. Addition

B. Substitution

C. Polymerization

D. All of these

Answer: D

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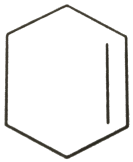
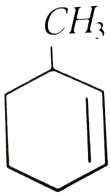
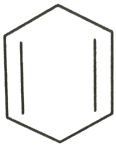
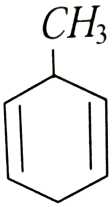
54. Which one of the following on ozonolysis followed by oxidation will give adipic acid

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B

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55. An organic compound reacts with Cu_2Cl_2 and also decolourise Br_2 water is

A. $CH_3 - C \equiv C - CH_3$

B. $CH_2 = CH - CH_3$

C. $CH_3 - C \equiv CH$

D. $CH_3 - CH_3$

Answer: C

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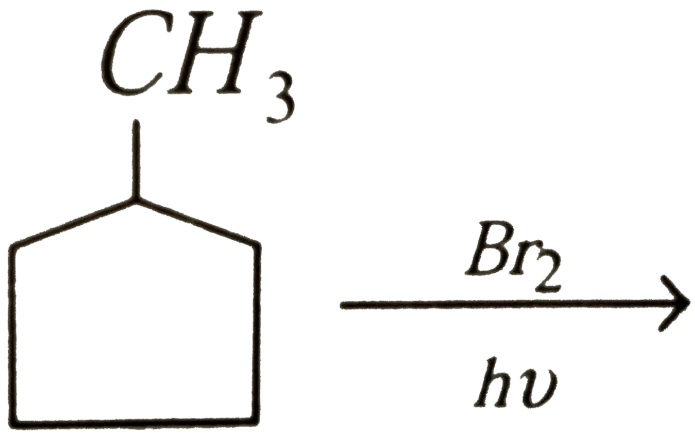
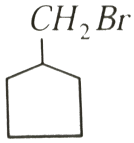
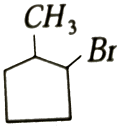
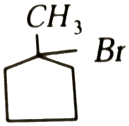
56. In the following reaction ,

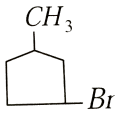


the major product obtained is

A. (a) 

B. (b) 

C. (c) 

(d) 

D.

Answer: C

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57. A hydrocarbon of formula C_6H_{10}, absorbs only one molecule of H_2 upon catalytic hydrogenation. Upon ozonolysis the hydrocarbons yeilds. $OHC - CH_2 - CH_2 - CH_2 - CH_2 - CHO$ the compound is:

A. Cyclohexane

B. Benzene

C. Cyclohexene

D. Cyclobutane

Answer: C

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58. By coaltar distillation, which is not obtained

A. Light oil

B. Middle oil

C. Heavy oil

D. Mobil oil

Answer: D

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59. What is the end product of the following sequence of operations

$$CaC_2 \xrightarrow{H_2O} A \xrightarrow[Hg^{++}]{dil.\,H_2SO_4} B \xrightarrow[H_2]{Ni} C$$

A. Methyl alcohol

B. Acetaldehyde

C. C_2H_5OH

D. C_2H_4

Answer: C

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60. An unknown compound "A" has a molecular formula C_4H_6. When "A" is treated with excess to Br_2 a new substance B with formula $C_4H_6Br_4$ is formed. "A" forms a white precipitate with ammoniacal silver nitrate solution "A" may

A. Butyne-1

B. Butyne-2

C. Butene-1

D. Butene-2

Answer: A

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61. The compound C_3H_4 has a triple bond , which is indicated by its reaction with

A. Bromine water

B. Baeyer's reagent

C. Fehling solution

D. Ammoniacal silver nitrate

Answer: D

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62. The number of moles of proton which can be easily given by 1-butyne (1 mole) is

A. 1

B. 2

C. 3

D. 6

Answer: A

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63. Poisonous gas 'Lewisite' is obtained by the reaction of

A. $CH \equiv CH$ and $AsCl_3$

B. $CH_2 = CH_2$ and $AsCl_3$

C. $CH \equiv CH$ and S_2Cl_2

D. $CH_2 = CH_2$ and NOCl

Answer: A

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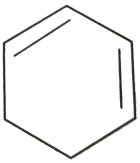
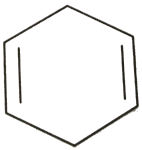
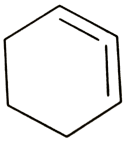
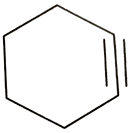
64. Which of the following compounds is the most stable

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A

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65. When acetylen reacted with hydroxylic acid in presence of $HgCl_{20}$ the product obtained is

A. Methyl chloride

B. Dichloroethane

C. Vinyl chloride

D. Ethylidine chloride

Answer: C

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66. In its reaction with silver nitrate acetylene shows

A. oxidising property

B. Reducing property

C. Basic property

D. Acidic property

Answer: D

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67. In order complete the reaction

1-Pentyne $\xrightarrow[a]{}$ 4-Octyne $\xrightarrow{b}$ cis-4-Octene, a and b will be

(1)$(a, b,), (NaNH_2, CH_3CH_2Br, : H_2, (\text{one mole }) \text{Pd or Ni})$

(2)$(a, b,), (NaNH_2, CH_3CH_2CH_2Br, : H_2, (\text{two mole }) \text{Pd or Ni})$

(3)$(a, b,), (NaNH_2, CH_3CH_2CH_2Br, : H_2, (\text{one mole }) \text{Pd or Ni})$

(4)$(a, b, ,), \left(NaNH_2, CH_3CH_2CH_2Br, : BH_3, H_2O_2, OH^-\right)$

A. 1

B. 2

C. 3

D. 4

Answer: C

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68. Ammonical cuprous chloride will give red precipitate with which one of the following

A. $CH_3 - C \equiv C - CH_3$

B. $CH_3 - CH = CH_2$

C. $CH_3 - C \equiv CH$

D. $CH_3 - CH = CH - CH_3$

Answer: C

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69. Which of the following does not give white precipitate with ammoniacal $AgNO_3$

A. $CH \equiv CH$

B. $CH_3 - C \equiv CH$

C. $CH_3 - C \equiv C - CH_3$

D. $\underset{Cl}{CH_2} - C \equiv CH$

Answer: C

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70. The correct order towards bond length is

A. $C-C<C=C<C\equiv C$

B. $C\equiv C<C=C<C-C$

C. $C=C<C\equiv C<C-C$

D. $C=C<C-C<C\equiv C$

Answer: B

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71. If acetylene is passed through an electric arc in the atmosphere of nitrogen , the compound formed is

A. HCN

B. Pyrrole

C. Pyrazole

D. Pyridine

Answer: A

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72. Ozonolysis of acetylene gives

A. Glycol

B. Glyoxal , formic acid

C. Formaldehyde

D. None

Answer: B

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73. Which of the following order of reagent is chosen to prepare 1,3-butadiene from C_2H_2

A. Cu_2Cl_2 / NH_4Cl and $H_2 / Pb(BaSO_4)$

B. $NH_4Cl / CuCl$ and $H_2 / Pd(BaSO_4)$

C. $H_2 / Pd(BaSO_4)$ and $CuCl / NH_4Cl$

D. $H_2 / Pb(BaSO_4)$ and $NH_4Cl / CuCl$

Answer: A

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74. What is the product formed when acetylene reacts with hypochlorous acid.

A. CH_3COCl

B. $ClCH_2CHO$

C. Cl_2CHCHO

D. ClCHCOOH

Answer: C

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75. A compound C_5H_8 which gives white ppt. with ammonical $AgNO_3$.A give $(CH_3)_2CHCOOH$ with hot alcoholic KOH then compound is

A. $CH_3CH_2 - CH_2 - CH = CH_2$

B. $CH_3 - CH_2 - C \equiv CH$

C. $(CH_3)_2CH - C \equiv CH$

D. $CH_2 = CH - CH_2 - CH = CH_2$

Answer: C

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76. $CH_3 - C \equiv CH \xrightarrow[Zn/H_2O_2]{O_3}$ Product . Product in above reaction is

A. CH_3COOH

B. $HCOOH$

C. Both (a) and (b)

D. $CH_3CHO + HCHO$

Answer: C

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77. Which of these will not react with acetylene?

A. NaOH

B. Ammonical $AgNO_3$

C. Na

D. HCl

Answer: A

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78. The treatment of CH_3MgX with $CH_3C \equiv C - H$ produces :

A. $CH_3C \equiv C - CH_3$

B. $CH_3 - \overset{H}{\underset{|}{C}} = \overset{H}{\underset{|}{C}} - CH_3$

C. CH_4

D. $CH_3 - CH = CH_2$

Answer: C

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79. The hydrocarbon which can react with sodium in liquid ammonia is

A. $CH_3CH_2C \equiv CH$

B. $CH_3CH = CHCH_3$

C. $CH_3CH_2C \equiv CCH_2CH_3$

D. $CH_3CH_2CH_2C \equiv CCH_2CH_2CH_3$

Answer: A

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80. $2-$ Hexyne gives trans $-2-$ hexene on treatment with :

A. Pt / H_2

B. Li / NH_3

C. $Pd / BaSO_4$

D. $LiAlH_4$

Answer: B

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81. Which of the following reactions will yield 2,2-dibromopropane

A. $HC \equiv CH + 2HBr \rightarrow$

B. $CH_3C \equiv CH + 2HBr \rightarrow$

C. $CH_3CH = CH_2 + HBr \rightarrow$

D. $CH_3CH = CHBr + HBr \rightarrow$

Answer: B

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82. The reaction $\underset{\text{Ethylene}}{H_2C = CH_2} + \underset{\text{water}}{H_2O} \xrightarrow[300^\circ / 60atm]{H_3PO_4} \underset{\text{Ethyl alcohol}}{C_2H_5OH}$ is called

A. Hydration

B. Sublimation

C. Dehydration

D. Substitution

Answer: A

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83. Ethylidine dichloride can be prepared by the reaction of HCl and

A. C_2H_4

B. C_2H_2

C. C_2H_5

D. All of these

Answer: B

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84. Acetylene can be obtained by the reaction

A. $HCOOK \xrightarrow{\text{electrolysis}}$

B. $CHI_3 + 6Ag + CHI_3 \xrightarrow{\Delta}$

C. $CH_3CH_2OH \xrightarrow[443^\circ C]{Conc.\,H_2SO_4}$

D. $Be_2C + H_2O \rightarrow$

Answer: B

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85. Hydration of which one of the following yields a ketone

A. Propyne

B. Ethene

C. Propene

D. Ethyne

Answer: A

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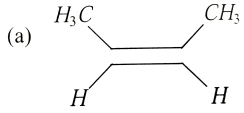
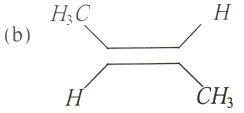
86. The major product in the reaction of 2-butyne will Li/Liq.NH_3 is

A. 

B. 

C. $CH_3CH_2CH_2CH_3$

D. $H_2C = CH - CH_2 - CH_3$

Answer: B

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87. $A \xleftarrow{H_2 \,/\, \text{Lindlar's catalyst}} CH_3C \equiv CCH_3 \xrightarrow{Na \,/\, Liq \quad NH_3} B$ A and B, respectively, are

A. Cis, trans-2-butene

B. Both trans-2-butene

C. Trans, cis-2-butene

D. Both cis-2-butene

Answer: A

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88. Propyne and propene can be distinguished by :

A. Conc. H_2SO_4

B. Br_2 in CCl_4

C. Alk. $KMnO_4$

D. $AgNO_3$ in NH_3

Answer: D

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89. Which is most sensitive towards addition reaction

A. $CH_2 = CH_2$

B. $CH \equiv CH$

C. Both are equally sensitive

D. $CH_3CH = CH - CH_3$

Answer: B

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90. $CaC_2 + H_2O \rightarrow X \xrightarrow{O_3 / H_2O / OH^+} HCOOH$ X is

A. C_2H_4

B. C_2H_2

C. C_2H_6

D. $Ca(OH)_2$

Answer: B

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91. A salt producing hydrocarbon among these compound is

A. Ethane

B. Methane

C. Ethene

D. Ethyne

Answer: D

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92. Ammong the following the one which can exist in free state as a stable compound is:

A. C_7H_9O

B. $C_8H_{12}O$

C. $C_6H_{11}O$

D. $C_{10}H_{17}O_2$

Answer: B

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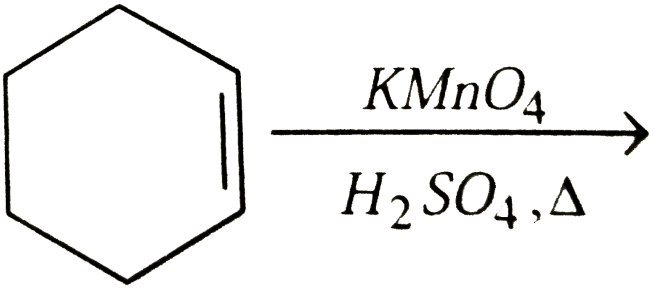
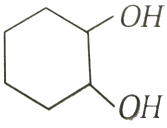
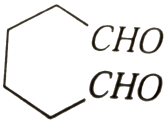
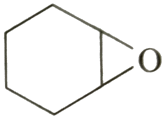
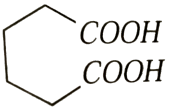
93. The final product in the given reaction is



A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: D

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94. The number of secondary hydrogens in 2,2-dimethylbutane is:

A. 8

B. 6

C. 4

D. 2

Answer: D

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95. $CH \equiv CH \xrightarrow{Ni(CN)_2} X$. Identify X in the given reaction

A. Benzene

B. Ethane

C. Cyclooctatetraene

D. Cyclohexane

Answer: C

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96. In the reaction

$HC \equiv CH \xrightarrow[\text{dil}H_2SO_4]{HgSO_4} X \xrightarrow{LIAIH_4} Y \xrightarrow{P, Br_2} Z,$ Z is

A. Ethylene bromide

B. Ethanol

C. Ethyl bromide

D. Ethylidene bromide

Answer: C

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97. In the following reaction $HC \equiv CH \xrightarrow[Hg^{2+}]{H_2SO_4}$ 'P'

Product 'P' will not give

A. Tollen's reagent test

B. Brady's reagent test

C. Victor Meyer's test

D. Iodoform test

Answer: C

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98. Shortest C-C bond length is present in

A. $CH_3 - CH_2 - CH_3$

B. $CH_3CH_2CH_2CH_3$

C. $CH_2 = CH - CH = CH_2$

D. $CH \equiv C - C \equiv CH$

Answer: D

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99. Carbide which react with water to give propyne is

A. CaC_2

B. SiC

C. Mg_2C_3

D. Al_4C_3

Answer: C

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100. To synthesize the unsymmetrical alkyne $CH_3 - C \equiv C - CH_2 - CH_3$ the reagents needed would be

A. Ethene, iodoethane, iodomethane and potassium hydroxide

B. Acetaldehyde , 1-bromopropane and conc. H_2SO_4

C. 1,2-dichloroethane , 1-propanol and alcoholic potassium hydroxide

D. Ethyne, iodomethane , iodoethane and sodamide

Answer: D

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101. The C-H bond length is minimum in the bond formed by

A. sp-s overlapping (as in alkynes)

B. sp^2 -s overlapping (as in alkenes)

C. sp^3 -s overlapping (as in alkanes)

D. None of these

Answer: A

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102. Which of the $C-C-$ bond is strongest

A. Formed by sp^3-sp^3 hybridised carbon atom (as in alkanes)

B. Formed by sp^2-sp^2 hybridised carbon atom (as in alkanes)

C. Formed by sp-sp hybridised carbon atom (as in alkanes)

D. All are equal

Answer: C

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103. Which of the following pairs has the same bond angle

A. Ethane and ethylene

B. Ethylene and acetylene

C. Ethylene and benzene

D. Acetylene and benzene

Answer: C

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104. Assertion:Cyclobutane is less stable than cyclopentane.

Reason : Presence of bent bonds causes "loss of orbital overlap"

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

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

C. if assertion is true but reason is false

D. If the assertion and reason both are false

Answer: C

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105. Assertion : CH_4 does not react Cl_2 in dark.

Reason : Chlorination of CH_4 takes place in sunlight.

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

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

C. if assertion is true but reason is false

D. If the assertion and reason both are false

Answer: B

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106. Assertion : $2-$ Bromobutane on reaction with sodium ethoxide in ethanol gives $2-$ butene as a major product.

Reason : $2-$ Butene is more stable than $1-$ butene.

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

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

C. if assertion is true but reason is false

D. If the assertion and reason both are false

Answer: D

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107. A) Addition of HBr on 2-butene gives two isomeric products.

R) Addition of HBr on 2-butene follows Markownikoff's rule.

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

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

C. if assertion is true but reason is false

D. If the assertion and reason both are false

Answer: B

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108. Assertion : Cyclopentadienyl anion is much more stable than allyl anion.

Reason : Cyclopentadienyl anion is aromatic in character.

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

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

C. if assertion is true but reason is false

D. If the assertion and reason both are false

Answer: A

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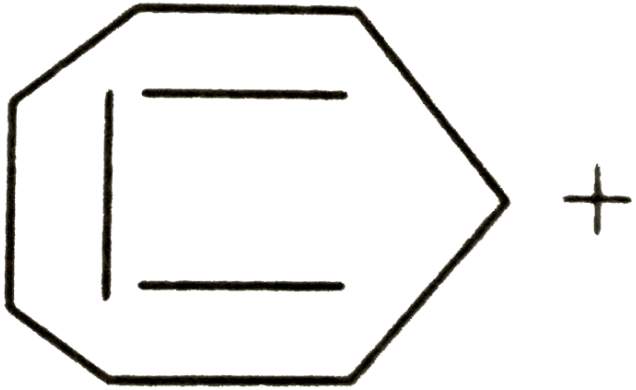
109. Assertion:Tropylium cation is aromatic in nature



Reason:The only property that determines its aromatic behaviour is its planar structure

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

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

C. if assertion is true but reason is false

D. If the assertion and reason both are false

Answer: C

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110. Assertion:Melting point of n-butane is higher than propane.

Reason: it is called oscillation effect

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

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

C. if assertion is true but reason is false

D. If the assertion and reason both are false

Answer: B

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111. Assertion :Iodination of alkanes is reversible

Reason:Iodination is carried out in presence of iodic acid

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

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

C. if assertion is true but reason is false

D. If the assertion and reason both are false

Answer: B

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112. Assertion:Isobutane on oxidation with $KMnO_4$ gives tert-butyl alcohol.

Reason:Oxidising agents have no effect on alkanes

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

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

C. if assertion is true but reason is false

D. If the assertion and reason both are false

Answer: B

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113. Assertion:Halogenation of alkanes is catalysed by tetraethyl lead

Reason:Halogenation proceeds through free radical mechanism

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

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

C. if assertion is true but reason is false

D. If the assertion and reason both are false

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114. Assertion : Neopentene forms only one monosubstituted compound.

Reason : Neopentane has high bond energy

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

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

C. if assertion is true but reason is false

D. If the assertion and reason both are false

Answer: C

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115. Assertion:Freezing point of neopentane is more than n-pentane.

Reason:Increase in vander Waals forces increases freezing point

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

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

C. if assertion is true but reason is false

D. If the assertion and reason both are false

Answer: B

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116. Assertion:Knocking lowers the efficiency of the engine

Reason:Fuel with minimum knocking property is preferred

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

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

C. if assertion is true but reason is false

D. If the assertion and reason both are false

Answer: B

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117. Assertion : The presence of Ag^+ enhance the solubility of alkenes in water.

Reason : Alkenes are weakly polar in nature.

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

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

C. if assertion is true but reason is false

D. If the assertion and reason both are false

Answer: B

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118. Assertion:Ethene on treating with Br_2 in presence of NaCl forms CH_2CICH_2Br and $CH_2Br - CH_2 - Br$

Reason:This addition involves the formation of free radicals

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

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

C. if assertion is true but reason is false

D. If the assertion and reason both are false

Answer: C

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119. Assertion : Propene reacts with HBr in presence of benzoyl peroxide to yield $1-$ bromopropane.

Reason : In presence of peroxide , the addition of HBr to propane follows ionic mechanism.

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

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

C. if assertion is true but reason is false

D. If the assertion and reason both are false

Answer: D

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120. In the reaction

$$H-C\equiv CH \xrightarrow[(2)\,CH_3CH_2Br]{(1)\,NaNH_2/liq.NH_3} X \xrightarrow[(2)\,CH_3CH_2Br]{(1)\,NaNH_2/liq.NH_3} Y$$

X and Y are

A. X=1-Butyne : Y=3-Hexyne

B. X=2-Butyne : Y=3-Hexyne

C. X=2-Butyne : Y=2-Hexyne

D. X=1-Butyne : Y=2-Hexyne

Answer: A

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ORDINARY THINKING (Objective question) (AROMATIC HYDROCARBON)

1. Which among the following is very strong o-p-directing groups?

A. OH

B. Cl

C. C_6H_5

D. Br

Answer: A

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2. Cyclic hydrocarbon molecules $'A'$ has all the carbon and hydrogen in a single plane. All the carbon-carbon bonds are of same length less than 1.54Å, but more than 1.34Å. The $C-C$ bond angle will be

A. 120°

B. 180°

C. 100°

D. $109^\circ 28'$

Answer: A

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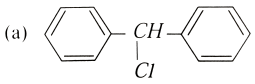
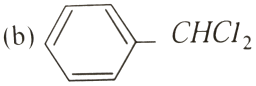
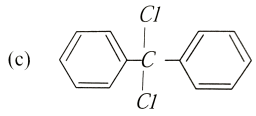
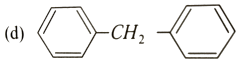
3. Which of the following structures correspond to the product expected, when excess of C_6H_6 reacts with CH_2Cl_2 in presence of anhydrous $AlCl_3$?

A. 

B. 

C. 

D. (d) 

Answer: D

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4. Benzene reacts with CH_3COCl in the presence of $AlCl_3$ to give

A. C_6H_5Cl

B. C_6H_5COCl

C. $C_6H_5CH_3$

D. $C_6H_5COCH_3$

Answer: D

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5. Chemical name of the insecticide gammaxene is

A. DDT

B. Benzene hexachloride

C. Chloral

D. Hexachloroethane

Answer: B

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6. Attacking or reactive or electrophilic species in nitration of benzene is or In the nitration of benzene with concentrated HNO_3 and H_2SO_4, the attck on ring is made by :

A. NO_2^-

B. NO_2^+

C. NO_3^-

D. NO_2

Answer: B

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7. $C_6H_6 + CH_3Cl \xrightarrow[AlCl_3]{\text{Anhydrous}} C_6H_5 - CH_3 + HCl$ the name of the above reaction is

A. Friedel-Craft's reaction

B. Kolbe's synthesis

C. Wurtz reaction

D. Gringnard reaction

Answer: A

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8. Anhydrous $AlCl_3$ is used as a catalyst in the friedel-crafts reaction because it is

A. Electron rich

B. Soluble in ether

C. Insoluble to chloride and aluminium ions

D. Electron deficient

Answer: D

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9. Select the true statement about benzene amongst the following

A. Because of unsaturation benzene easily undergoes addition reactions

B. There are two types of C-C bonds in benzene molecule

C. There is a cyclic delocalisation of π electrons in benzene

D. Monosubstitution of benzene group gives three isomeric substances

Answer: C

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10. Electrophile in the case of chlorination of benzene in presence of $FeCl_3$ is

A. Cl^+

B. Cl^-

C. Cl

D. $FeCl_3$

Answer: A

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11. Which one of these is not compatible with arenes

A. Greater stability

B. Delocalisation of π-electrons

C. Electrophilic addition

D. Resonance

Answer: C

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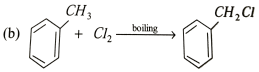
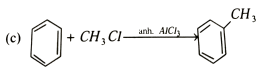
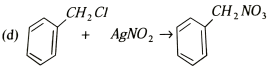
12. Which one of the following is a free - radical substitution reaction ?

A. $CH_3CHO + HCN \rightarrow CH_3CH(OH)CN$

B. 

C. 

D. 

Answer: B

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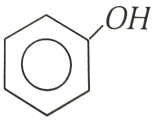
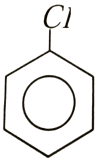
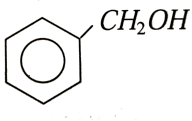
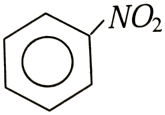
13. Which one of the following is the most reactive towards electrophilic attack?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A

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14. The raction of toluene with CI_2 in presence of $FeCI_3$ gives X and reaction in presence of light gives Y Thus X and Y are .

A. X=benzyl chloride , Y=m-chlorotoluene

B. X=benzyl chloride , Y=o-chlorotoluene

C. X=m-chlorotoluene, Y=p-chlorotoluene

D. X=o- and p- chlorotoluene, Y=trichloromethyl benzene

Answer: D

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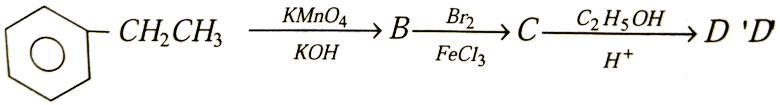
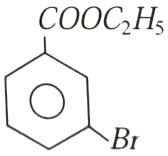
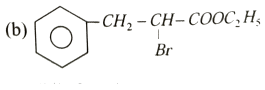
15. Complete the following reaction

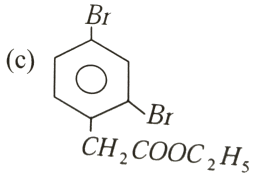


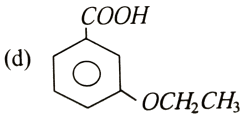
would be

A. (a)



B. 

C. 

D. 

Answer: A

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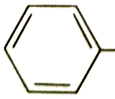
16. Complete the following reaction

The radical,  $CH_2^{\bullet}$ is aromatic because it has

A. 6p-orbitals and 7 unpaired electrons

B. 6p-orbitals and 6 unpaired electrons

C. 7p-orbitals and 6 unpaired electrons

D. 7p-orbitals and 7 unpaired electrons

Answer: B

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17. Some meta-directing substituents in aromatic substitution are given which one is the most deactivating?

A. $-NO_2$

B. $-C \equiv N$

C. $-SO_3H$

D. $-COOH$

Answer: A

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18. Which of the following compounds will not undergo Friedel — Crafts reaction easily ?

A. Toluene

B. Cumene

C. Xylene

D. Nitrobenzene

Answer: D

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19. Product obtained after nitration of nitrobenzene is

A. TNT

B. 1,3-dinitrobenzene

C. Picric acid

D. 1,4-dinitrobenzene

Answer: B

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20. Nitrobenzene on reaction with conc. $\frac{HNO_3}{H_2SO_4}$ at $80 - 100^\circ C$ forms which one of the following products?

A. TNT

B. 1,3-dinitrobenzene

C. Picric acid

D. 1,4-dinitrobenzene

Answer: B

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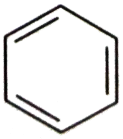
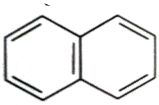
21. Which of the following chemical system is non aromatic

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: D

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22. Which one of the following compounds will undergo meta substitution (mainly) on monochlorination?

A. Ethoxy ethane

B. Chlorobenzene

C. Ethyl benzoate

D. Phenol

Answer: C

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23. On heating a mixture of sodium benzoate and sodalime, the following is obtained

A. Toluene

B. Phenol

C. Benzene

D. Benzoic acid

Answer: C

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24. Catalytic hydrogenation of benzene gives

A. Xylene

B. Cyclohexane

C. Benzoic acid

D. Toluene

Answer: B

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25. Which is formed when benzene is heated with chlorine in the presence of sunlight

A. $C_6H_5CCl_3$

B. $C_6H_5CHCl_2$

C. $C_6H_5CH_2Cl_2$

D. $C_6H_6Cl_6$

Answer: D

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26. $C_6H_6 \xrightarrow[H_2SO_4]{HNO_3} X \xrightarrow[FeCl_3]{Cl_2} Y$

Sequence Y can be

A. 1-nitrochloro benzene

B. 3-nitrochloro benzene

C. 4-nitrochloro benzene

D. 1,2-nitrochloro benzene

Answer: B

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27. Pyridine is less basic than triethylamine because .

A. Pyridine has aromatic character

B. Nitrogen in pyridine is sp^2 hybridized

C. Pyridine is a cyclic system

D. In pyridine, lone pair of nitrogen is delocalized

Answer: D

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28. The hydrocarbon which does not decolourise alkaline $KMnO_4$ solution and also does not give any precipitate with ammoniacal silver nitrate is

A. Benzene

B. Acetylene

C. Propyne

D. Butyne-1

Answer: A

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29. The ratio of σ and π bond in benzene is

A. 2

B. 4

C. 6

D. 8

Answer: B

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30. Most common reactions of benzene (aromatic hydrocarbon) and its derivatives are

A. Electrophilic addition reactions

B. Electrophilic substitution reactions

C. Nucleophilic addition reaction

D. Nucleophilic substitution reactions

Answer: B

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31. Which of the following oil is obtained from benzene after fractional distillation of coal tar

A. Light oil

B. Heavy oil

C. Middle oil

D. Anthracene oil

Answer: A

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32. Which of the given species cannot be used in Friedel Craft's reactions ?

A. $FeCl_3$

B. $FeBr_2$

C. $AlCl_3$

D. NaCl

Answer: D

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33. Chlorobenzene is $o, p-$ directing in electrophilic substitution reaction. The directing influence is explained by

A. $+M$ of Ph

B. I of Cl

C. $+M$ of Cl

D. $+I$ of Ph

Answer: C

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34. Necessary conditions for halogenation are

A. Cold and dark

B. presence of halogen carrier

C. Both (a) and (b)

D. None

Answer: C

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35. Which of the following reactions takes place when a mixture of concentrated HNO_3 and H_2SO_4 reacts on benzene at $350K$?

A. Sulphonation

B. Nitration

C. Hydrogenation

D. Dehydration

Answer: B

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36. Nitration of benzene by nitric acid and sulphuric acid is

A. Electrophilic substitution

B. Electrophilic addition

C. Nucleophilic substitution

D. Free radical substitution

Answer: A

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37. Benzene is obtained from

A. Coaltar

B. Plant

C. Animal

D. Charcoal

Answer: A

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38. After ozonolysis of benzene (not hydrolysis) , the product is

A. Benzene triozonide

B. Glyoxal

C. Ethanediol

D. All of them

Answer: A

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39. Which acid will not form hydrocarbon

A. Cinnamic acid

B. Isothallic acid

C. Salicylic acid

D. Picric acid

Answer: D

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40. In which of the following , the bond length between carbon and carbon atom is equal

A. 2-butene

B. Benzene

C. 1-butene

D. 1-propyne

Answer: B

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41. The attacking reagent in electrophilic sulphonation of benzene is

A. SO_2

B. SO_3

C. SO_4^{2-}

D. HSO_3^-

Answer: B

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42. Benzene vapour mixed with air when passed over V_2O_5 catalyst at 775K gives

A. Glyoxal

B. Oxalic acid

C. Maleic anhydride

D. Fumaric acid

Answer: C

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43. Decreasing order of C-C bond length is (I) C_2H_4 (II) C_2H_2 (III) C_6H_6 (IV) C_2H_6

A. IV gt III gt I gt II

B. I gt II gtIV gt III

C. II gt I gt IV gt III

D. IV gt I gt III gt II

Answer: A

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44. Which among the following is very strong o-p-directing groups?

A. $-Cl$

B. $-OR$

C. $-NH_2$

D. $-NHR$

Answer: D

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45. Which of the following yields both alkane and alkene ?

A. Kolbe's reaction

B. Williamson's synthesis

C. Wurtz reaction

D. Sandmeyer reaction

Answer: A

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46. Toluene on oxidation with dilute HNO_3 and alkaline $KMnO_4$ gives

A. Benzaldehyde

B. Phenol

C. Nitrotoluene

D. Benzoic acid

Answer: D

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47. In the following reaction, the product 'R' is:

$$CaC_2 \xrightarrow{H_2O} P \xrightarrow[\text{tube}]{\text{hot iron}} Q \xrightarrow[AlCl_3]{CH_3Cl} R$$

A. Benzene

B. Ethylbenzene

C. Toluene

D. n-propylbenzene

Answer: C

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48. The compound formed as a result of oxidation of ethyl benzene by $KMnO_4$ is :

A. Benzophenone

B. Acetophenone

C. Benzoic acid

D. Benzyl alcohol

Answer: C

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49. The compound used as an explosive is

A. 2,4,6-tribromoaniline

B. 1,3,5-trinitrobenzene

C. 2,4,6-trichlorotoluene

D. 1,3,5-trichlorobenzene

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50. What happens when napthalene balls are put inside kerosene

A. Precipitates

B. Dissolves upon heating

C. Dissolves easily

D. Does not dissolve

Answer: C

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51. Three fused benzene rings are found in

A. Napthalene

B. Anthracene

C. Phenanthroline

D. Triphenyl methane

Answer: B

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52. Which of the following is not aromatic

A. Benzene

B. Cyclopenyl cation

C. Trophyliumcation

D. Cyclopentadienyl cation

Answer: D

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53. The strongest ortho/para and the strongest meta directing groups, respectively, are

A. $-NO_2$ and $-NH_2$

B. $-CONH_2$ and $-NH_2$

C. $-NH_2$ and $-CONH_2$

D. $-X$ and $-CONH_2$

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54. Meta-directing and deactivating group in the aromatic electrophilic substitution is :

A. $-CH_3$

B. $-OH$

C. $-NO_2$

D. $-Cl$

Answer: C

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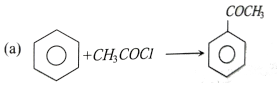
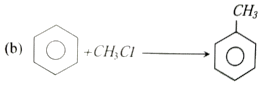
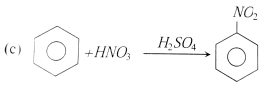
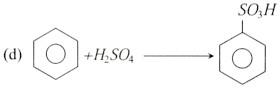
55. In which reaction , polysubstitution takes place :

A. 

B. 

C. 

D. 

Answer: B

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56. Acylation of benzene to produce aliphatic aromatic ketones is known as

A. Benzoin condensation

B. Hydroformylation

C. Clemmensen reduction

D. Friedel-Cralft 's reaction

Answer: D

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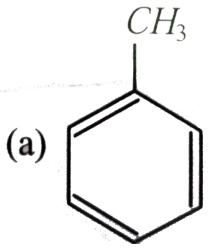
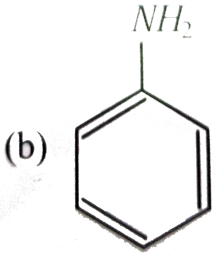
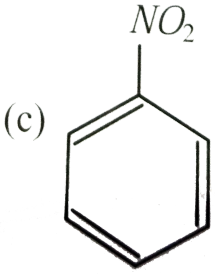
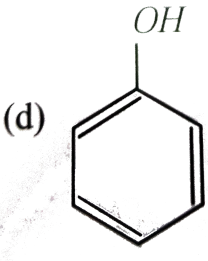
57. Which of the following compounds react slower than benzene in electrophilic substitution?

A. 

B. 

C. 

D. 

Answer: C

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58. What is the end product which is obtained on the nitration on toluene?

A. o-nitrotoluene

B. p-nitrotoluene

C. 2,4-dinitrotoluene

D. 2,4,6-trinitrotoluene

Answer: D

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59. Benzene is prepared in laboratory from which one of the following compounds

A. $C_6N_5N_2Cl$

B. C_6H_5OH

C. C_6H_5COONa

D. $C_6H_5SO_3H$

Answer: C

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60. Among the following compound which one is planar in shape

A. methane

B. Acetylene

C. Benzene

D. isobutane

Answer: C

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61. A compound 'A' when treated with HNO_3 (in presence of H_2SO_4) gives compound B, which is the reduced with Sn and HCl to aniline ? The compound 'A' is

A. Toluene

B. Benzene

C. Ethane

D. Acetamide

Answer: B

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62. The reaction of benzene with chlorine in the presence of iron gives

A. Benzene hexachloride

B. Chlorobenzene

C. Benzyl chloride

D. Benzoyl chloride

Answer: B

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63. The 'middle oil' fraction of coaltar distillation contains

A. Benzene

B. Anthracene

C. Naphthalene

D. Xylene

Answer: C

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64. Hydrocarbon C_6H_6 decolourise Br_2 water and give ppt. with ammoniacal $AgNO_3$. Hydrocarbon can be

A. 1,3,5-cyclohexatriene

B. 1,5-hexadiyne

C. 2,4-hexadiyne

D. None

Answer: D

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65. In reaction

$$C_6H_5CH_3 \xrightarrow{\text{oxidation}} A \xrightarrow{\text{NaOH}} B \xrightarrow{\text{sodalime}} C$$

Then C is

A. C_6H_6

B. C_6H_5OH

C. $C_6H_5COO\overset{+}{N}a$

D. C_6H_5ONa

Answer: A

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66. The carbon -carbon bond distance in benzene is

A. Longer than a C-C single bond

B. Longer than a C-C double bond

C. Longer than a C=C double bond

D. Longer than a $C \equiv C$ triple bond

Answer: B

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67. Number of resonating structures for Dewar's benzene will be

A. One

B. Two

C. Three

D. Four

Answer: C

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68. Adding of Cl_2 to benzene in the presence of $AlCl_3$ is an example of

A. Addition

B. Halogenation

C. Substitution

D. Elimination

Answer: C

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69. Benzene shows

A. Substitution

B. Addition

C. Oxidation

D. All of these

Answer: D

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70. The purest form of coal is

A. Peat

B. Anthracite

C. Bituminous

D. Lignite

Answer: B

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71. Benzene can be obtained in the reaction

A. Ethene +1,3-butadiene

B. Trimerisation of ethyne

C. Reduction of PhCHO

D. All of these

Answer: B

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72. Thiophene and benzene are separated by

A. Sulphonation of thiophene

B. Sulphonation of benzene

C. Nitration of thiophene

D. Nitration of benzene

Answer: B

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73. Amongst the following the most basic compound is :

A. Benzylamine

B. Aniline

C. Acetanilide

D. p-nitroaniline

Answer: A

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74. Presence of a nitro group in a benzene ring:

A. Activates the ring towards electrophilic substitution

B. Renders the ring basic

C. Deactivates the ring towards nucleophilic substitution

D. Deactivates the ring towards electrophilic substitution

Answer: D

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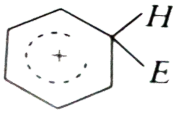
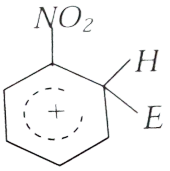
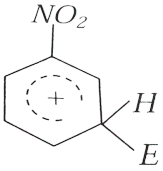
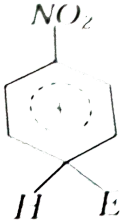
75. The electrophile, $E^{\oplus}$ attacks the benzene ring to generate the intermediate σ-complex. Of the following, which σ-complex is of lowest energy ?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A

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76. order of reactivity of C_2H_6, C_2H_4 and C_2H_2 is

A. $C_2H_6 > C_2H_4 > C_2H_2$

B. $C_2H_2 > C_2H_6 > C_2H_4$

C. $C_2H_2 > C_2H_4 > C_2H_6$

D. All are equally reactive

Answer: C

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77. Which one of the following is not aromatic ?

A. Cyclopentadienyl cation

B. Cyclooctatetraene

C. Cycloheptatriene

D. Cycloheptatrienyl cation

Answer: D

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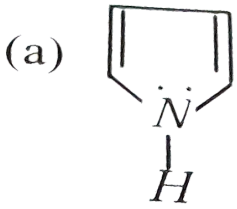
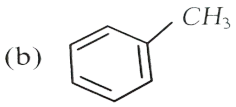
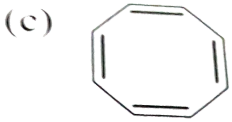
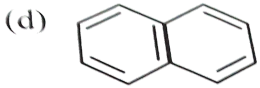
78. Which is a non-aromatic compound

A. 

B. 

C. 

D. 

Answer: C

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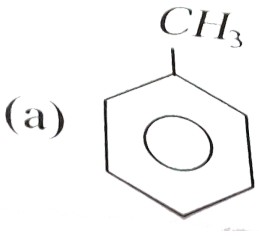
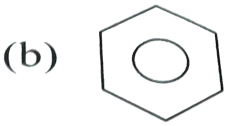
79. Which of the following will be easily nitrated

A. 

B. 

C. CH_3NO_2

D. $C_6H_5NO_2$

Answer: A

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80. Aromatisation of n-heptane by passing over $(Al_2O_3 + Cr_2O_3)$ catalyst at 773 K gives

A. Benzene

B. Toluene

C. Mixture of both

D. Heptylene

Answer: B

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81. The chemical name of anisole is

A. Propanone

B. Acetone

C. Ethanoic acid

D. methoxy benzene

Answer: D

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82. Which of the following is not used in Friedel-Craft's reaction

A. Phenyl acetanilide

B. Bromobenzene

C. Benzene

D. Chlorobenzene

Answer: A

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83. Benzne can be obtained by heating either benzoic acid with X or phenol with Y.X and Y, respectively are

A. Zinc dust and soda lime

B. Soda lime and zinc dust

C. Zinc dust and sodium hydoxide

D. Soda lime and copper

Answer: B

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84. In presence of light & heat toluene chlorinated & react with aqueous NaOH give

A. o-cresol

B. p-cresol

C. Mixture of o- cresol & p-cresol

D. 1,3,5-trihydroxy toluene

Answer: D

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85. Which one of these is not true of benzene :

A. it forms only one type of monosbustituted product

B. There are three carbon-carbon single bonds double bonds

C. The heat of hydrogenation of benzene is less than the theoretical value

D. The bond angle between the carbon -carbon bonds is 120°

Answer: B

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86. Which of the following having delocalised electron

A. Benzene

B. Cyclohexane

C. CH_4

D. C_2H_6

Answer: A

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87. The product formed when toluene is heated in light with Cl_2 and in absence of halogen carrier is

A. Benzotrichloride

B. Gammexane

C. Chlorobenzene

D. None of these

Answer: A

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88. Friedel-Crafts reaction using MeCI and anhydrous $AICI_3$ will take place most effeciently with :

A. Benzene

B. Nitrobenzene

C. Acetophenone

D. Toluene

Answer: D

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89. An equimolar mixture of toluene and chlorobenzene is treated with a mixture of conc. H_2SO_4 and conc. HNO_3 Indicate the correct statement from the following :

A. p-nitrotoluene is formed in excess

B. Equimolar amounts of p-nitrotoluene and p-nitrochlorobenzene are formed

C. p-nitrochlorobenzene is formed in excess

D. m-nitrochlorobenzene is formed in excess

Answer: A

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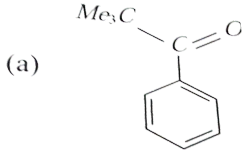
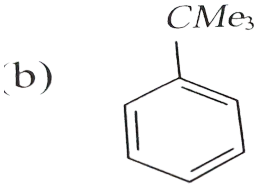
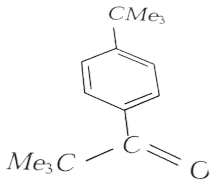
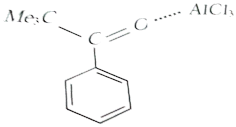
90. Reaction of benzene with Me_3COCl in the presence of anhydrous $AlCl_3$ gives

A. 

B. 

C. 

D. 

Answer: B

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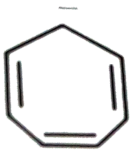
91. Which of the following is aromatic ?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: C

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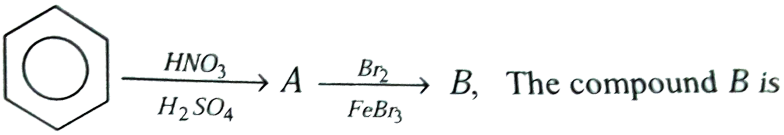
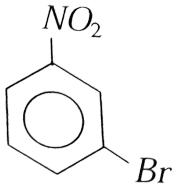
92. Complete the following reaction

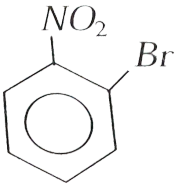


The compound B is

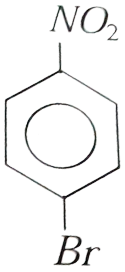
A. (a)



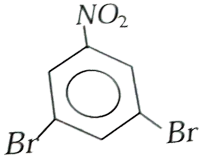
B. (b)



C. (c)



D. (d)



Answer: A

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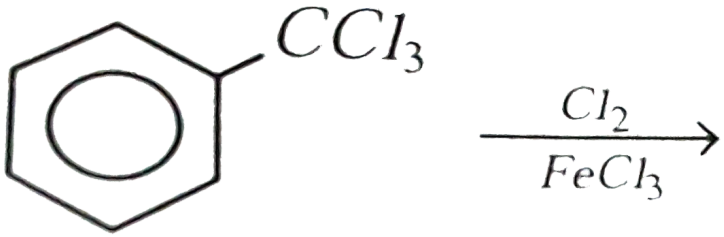
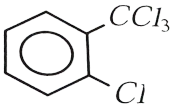
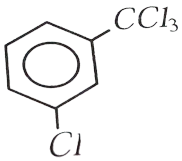
93. Find the major product in the following reaction



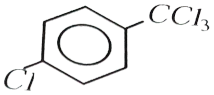
A. (a)



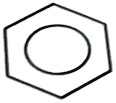
B. (b)



C. (c)



D. (d)



Answer: B

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94. Which of the following group activates the benzene ring most towards electrophilic substitution

A. $-CHO$

B. $-NR_2$

C. $-NHCOCH_3$

D. $-NO_2$

Answer: B

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95. Benzene reacts with I_2 in presence of which of the following to give iodobenzene

A. HNO_3

B. HI

C. SO_2

D. H_2O

Answer: A

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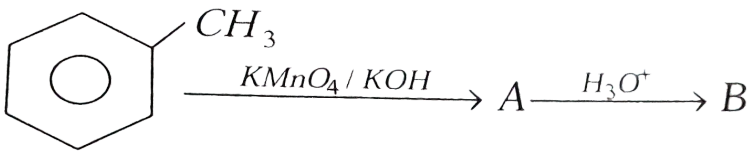
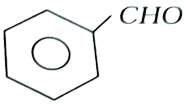
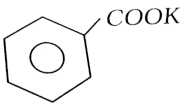
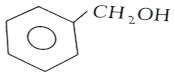
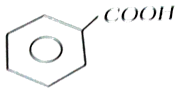
96. The final product formed in the reaction is



A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: D

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97. The compound with molecular formula C_8H_{10} which will give only two isomers on electrophilic substitution with $Cl_2 / FeCl_3$ or with HNO_3 / H_2SO_4 is

A. p-dimethyl benzene

B. m-dimethyl benzene

C. o-dimethyl benzene

D. Ethyl benzene

Answer: C

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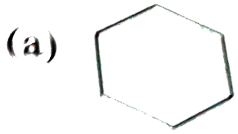
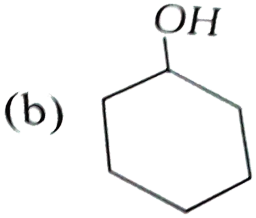
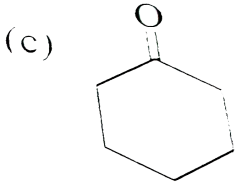
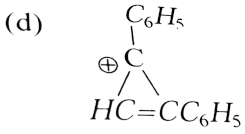
98. Which compound is aromatic

A. 

B. 

C. 

D. 

Answer: D

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99. Benzene can react with

A. Br_2 water

B. HNO_3

C. H_2O

D. CH_3OH

Answer: B

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100. Chorination of benzene is not possible in the following reaction :

A. $C_6H_6 + Cl_2 \xrightarrow{FeCl_3}$

B. $C_6H_6 + HOCl \xrightarrow{H^+}$

C. $C_6H_6 + I - Cl \xrightarrow{ZnCl_2}$

D. $C_6H_6 + Cl_2 \xrightarrow{AlCl_3}$

Answer: B

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101. Xylenes on oxidation with acidic $KMnO_4$ gives

A. Terphthalic acid

B. Phthalic acid

C. Isophthalic acid

D. All of these

Answer: D

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102. Aromatic compounds burn with a sooty flame because

A. They have a ring structure of carbon atoms

B. They have a relatively high percentage of hydrogen

C. They have a relatively high percentage of carbon

D. They resist reaction with oxygen of air

Answer: C

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103. For preparing monoalkyl benzene, acylation process is preferred than direct alkylation because

A. In alkylation, a poisonous gas is evolved

B. In alkylation , large amount of heat is evolved

C. In alkylation, polyalkylated product is formed

D. Alkylation is very costly

Answer: C

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104. Which of the following is not formed by the ozonolysis of (o-xylene)

A. Glyoxal

B. Ethyl glyoxal

C. Dimethyl glyoxal

D. Methyl glyoxal

Answer: B

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105. Point out the wrong statement in relation to the structure of benzene

A. It forms only one monosubstitution product

B. The C-C bond distance in benzene is uniformly 1.397 Å

C. It is a resonance hybrid of a number of canonical forms

D. It has three delocalised π-molecular orbitals

Answer: A

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106. Six carbon atoms of benzene are of:

A. One type

B. Two types

C. Three types

D. Six types

Answer: A

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107. Benzene on treatment with a mixture of conc.HNO_3 and conc. H_2SO_4 at $100^\circ C$ gives

A. Nitrobenzene

B. m-dinitrobenzene

C. p-dinitrobenzene

D. o-dinitrobenzene

Answer: B

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108. Which xylene is most readily nitrated ?

A. Ortho

B. Para

C. Meta

D. All at the same rate

Answer: C

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109. Which of the following would be least reactive towards bromide

A. Nitrobenzene

B. Phenol

C. Anisole

D. Chlorobenzene

Answer: A

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110. (i)Chlorobenzene and (ii) benzene hexachloride are obtained from benzene by the reaction of chlorine, in the presence of

A. (i)Direct sunlight and (ii) anhydrous $AlCl_3$

B. (i)Sodium hydroxide and (ii)sulphuric acid

C. (i)Ultraviolet light and (ii)anhydrous $FeCl_3$

D. (i)Anhydrous $AlCl_3$ and (ii)direct sunlight

Answer: D

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111. Which of the following has lowest knocking property

A. Olefins

B. Straight chain paraffins

C. Aromatic hydrocarbons

D. Branched chain paraffins

Answer: C

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112. Nitration of toluene takes place at

A. o-position

B. m-position

C. p-position

D. Both o and p-positions

Answer: D

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113. Which of the following is not o,p - directing group ?

A. $-NH_2$

B. $-OH$

C. $-X$ (halogens)

D. $-CHO$

Answer: D

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114. Assertion : Pyrrole is an aromatic heterocyclic compound

Reason : It has cyclic delocalised 6πelectrons

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

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

C. if assertion is true but reason is false

D. If assertion and reason both are false

Answer: A

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115. Assertion : Alkyl benzene is not prepared by Friedel – Crafts alkylation of benzene.

Reason : Alkyl halides are more reactive than acyl halides.

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

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

C. if assertion is true but reason is false

D. If assertion and reason both are false

Answer: B

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116. Assertion: Styrence on reaction with HBr gives 1-bromo-1-phenylethane .

Reason: Benzyl radical is more stable than alkyl redical .

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

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

C. if assertion is true but reason is false

D. If assertion and reason both are false

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117. Assertion:Benzene is a solvent for the Friedel Craft's alkylation of bromobenzene.

Reason : Friedel Craft's reation is used to introduce an alkyl or acyl group in benzene nucleus

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

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

C. if assertion is true but reason is false

D. If assertion and reason both are false

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118. Assertion : [10]Annulene is not aromatic though it contains Huckel number of π-electrons.

Reason:Steric interaction between internal hydrogens makes it non-planar

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

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

C. if assertion is true but reason is false

D. If assertion and reason both are false

Answer: A

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119. Statement-I : Nitration of toluene is easier than benzene

Because

Staement-II : The methyl group in touene is electron-releasing

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

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

C. if assertion is true but reason is false

D. If assertion and reason both are false

Answer: A

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120. Assertion : Benzene forms benzene sulphonic acid with fuming H_2SO_4 at high temperature .

Reason : The attacking species is SO_3

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

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

C. if assertion is true but reason is false

D. If assertion and reason both are false

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121. Assertion :Activating groups are electron donors.

Reason: Nitroso group is activating group

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

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

C. if assertion is true but reason is false

D. If assertion and reason both are false

Answer: C

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122. Assertion:Aryl halides are less reactive towards substitution of halogen atom.

Reason : Halogens are o,p-directing in nature

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

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

C. if assertion is true but reason is false

D. If assertion and reason both are false

Answer: B

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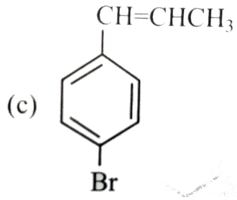
123. The reaction of $C_6H_5CH=CHCH_3$ with HBr produces

A. $C_6H_5CH_2\underset{\underset{\text{Br}}{|}}{C}HCH_3$

B. $C_5H_5CH_2CH_2CH_2Br$

C. 

D. $C_6H_5\underset{\underset{Br}{|}}{C}HCH_2CH_3$

Answer: D

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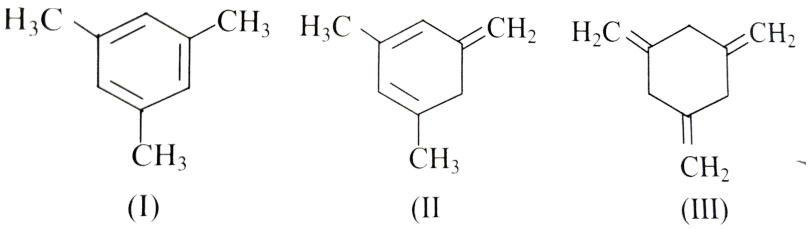
124. Given 

The enthalpy of hydrogenation of these compound will be in

A. $III > II > I$

B. $II > III > I$

C. $II > I > III$

D. $I > II > III$

Answer: A

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125. Which of the following can beused as the halide component for friedel-crafts reaction?

A. isopropyl chloride

B. Chlorobenzene

C. Bromobenzene

D. Chloroethene

Answer: A

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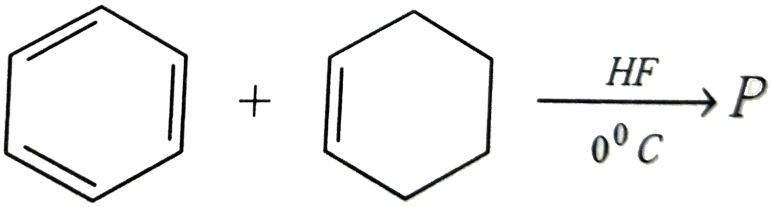
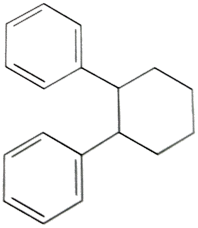
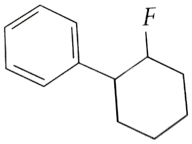
126. Complete the following reaction



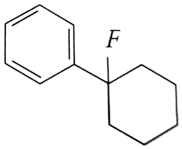
A. (a)



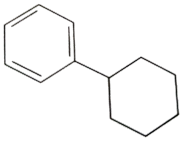
B. (b)



C. (c)



D. (d)



Answer: D

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127. The compound C_7H_8 undergoes the following reactions :

$$C_7H_8 \xrightarrow{3Cl_2/\Delta} A \xrightarrow{Br_2/Fe} B \xrightarrow{Zn/HCl} C$$

The product 'C' is

A. m-bromotoluene

B. o-bromotoluene

C. 3-bromo-2,4,6-trichlorotoluene

D. p-bromotoluene

Answer: A

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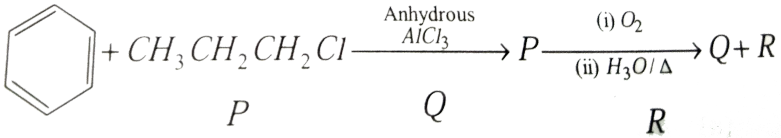
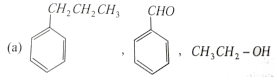
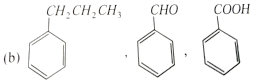
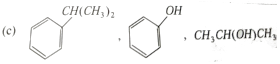
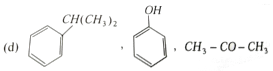
128. identify the major product P, Q and R in the following sequence of reaction



A. 

B. 

C. 

D. 

Answer: D

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CRITICAL THINKING (Objective questions)

1. In the following reactions,

(a) $H_3C-\underset{\displaystyle CH_3}{\underset{|}{CH}}-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3 \xrightarrow{H^+ / heat} \underset{\text{Major product}}{A} + \underset{\text{Minor product}}{B}$

(b) $A \xrightarrow[\text{in absence of peroxide}]{HBr,\, dark} \underset{\text{Major product}}{C} + \underset{\text{Minor product}}{D}$

The major products (A) and (C) are respectively:

A. $CH_2 = \overset{CH_3}{\overset{|}{C}} - CH_2 - CH_3$ and $CH_3 - \underset{Br}{\overset{CH_3}{\overset{|}{\underset{|}{C}}}} - CH_2 - CH_3$

B. $CH_2 = \overset{CH_3}{\overset{|}{C}} - CH_2 - CH_3$ and $\underset{Br}{\overset{|}{CH_2}} - \overset{CH_3}{\overset{|}{C}}H - CH_2 - CH_3$

C. $CH_2 - \overset{CH_3}{\overset{|}{C}} = CH_2 - CH_3$ and $\underset{Br}{\overset{|}{CH_2}} - \overset{CH_3}{\overset{|}{C}}H - CH_2 - CH_3$

D. $CH_3 - \overset{CH_3}{\overset{|}{C}} = CH - CH_3$ and $CH_3 - \overset{CH_3}{\overset{|}{C}}H - \underset{Br}{\overset{|}{CH}} - CH_3$

Answer: C

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2. The compound $CH_3 - \overset{CH_3}{\overset{|}{C}} = CH - CH_3$ on reaction with $NaIO_4$ in the presence of $KMnO_4$ gives

A. $CH_3CHO + CO_2$

B. CH_3COCH_3

C. $CH_3COCH_3 + CH_3COOH$

D. $CH_3COCH_3 + CH_3CHO$

Answer: D

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3. Formation of polyethylene from calcium carbide takes place as follows

$CaC_2 + 2H_2O \rightarrow Ca(OH)_2 + C_2H_2$

$C_2H_2 + H_2 \rightarrow C_2H_2$

$N(C_2H_4) \rightarrow (-CH_2 - CH_2 -)_n$

The amount of polyethylene obtained from $64.1 kg CaC_2$ is

A. 7 kg

B. 14 kg

C. 21 kg

D. 28 kg

Answer: D

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4. If ethylene, carbon monoxide and water is heated at high temperature , which of the following is formed

A. $C_4H_8O_2$

B. C_2H_5COOH

C. CH_3COOH

D. $CH_2 = CH - COOH$

Answer: B

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5. What is formed when calcium carbide reacts with heavy water?

A. C_2D_2

B. CaD_2

C. CaD_2O

D. CD_2

Answer: A

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6. $CaC_2 + H_2O \rightarrow A \xrightarrow{H_2SO_4 / HgSO_4} B$. Identify A and B in the given reaction

A. C_2H_2 and CH_3CHO

B. CH_4 and HCOOH

C. C_2H_4 and CH_3COOH

D. C_2H_2 and CH_3COOH

Answer: A

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7. Napthalene is a/an

A. Ionic solid

B. Covalent solid

C. metallic solid

D. Molecular solid

Answer: D

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8. Which of the following is not aromatic

A. Benzene

B. Napthalene

C. Pyridine

D. 1,3,5 heptatriene

Answer: D

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9. $CH \equiv CH + HBr \rightarrow X$, product X is

A. Ethylene bromide

B. Vinyl bromide

C. Bromo ethane

D. Ethyledine bromide

Answer: B

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10. The decreasing order of acidic character among ethane(I), ethene(II), ethyne(III) and propyne (IV) is:

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

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

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

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

Answer: C

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11. Benzene is obtained by

A. Substitution of three acetylene molecules

B. Addition of three C_2H_2 molecules

C. Polymerization of three C_2H_2 molecule

D. Condensation of three C_2H_2 molecule

Answer: C

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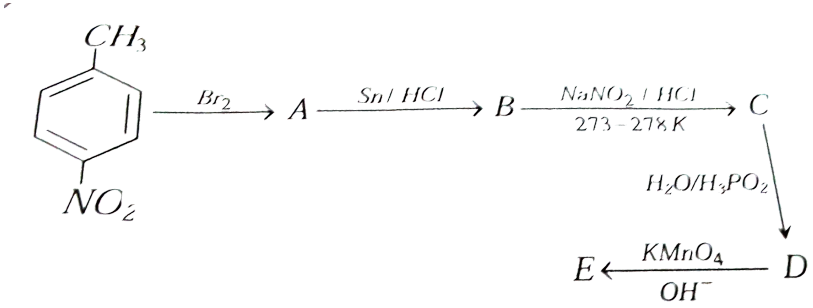
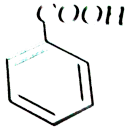
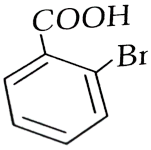
12. Identify the product (E) in the following sequence of reactions



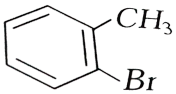
A. (a)



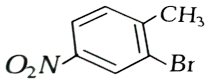
B. (b)



C. (c)



D. (d)



Answer: B

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13. The following is a conjugated diene

A. $CH_3 - CH = C = CH - CH_3$

B. $CH_2 = CH - CH_2 - CH = CH_2$

C. $CH_2 = CH - CH_2 - CH_2 - CH = CH_2$

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

Answer: D

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14. Which one of the following reactions is most suitable for the preparation of n-propyl benzene

A. Friedel-Craft's reaction

B. Wurtz reaction

C. Wurtz -Fitting reaction

D. Gringnard reaction

Answer: C

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15. The compound X on reaction with $HgSO_4 + H_2SO_4$ gives

Y which one oxidation gives acetic acid. X is

A. C_2H_2

B. C_2H_4

C. C_3H_4

D. C_4H_6

Answer: A

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16. The reaction

$$CH_3CH = CH_2 \xrightarrow[H^+]{CO + H_2O} CH_3 - \underset{\underset{\text{COOH}}{|}}{CH} - CH_3$$ is known as

A. Wurtz reaction

B. Koch reaction

C. Clemmensen reduction

D. Kolbe's reaction

Answer: B

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17. When ethyl alcohol is heated with red phosphorus and HI, then which of the following is formed

A. C_2H_6

B. CH_4

C. C_3H_8

D. C_2H_4

Answer: A

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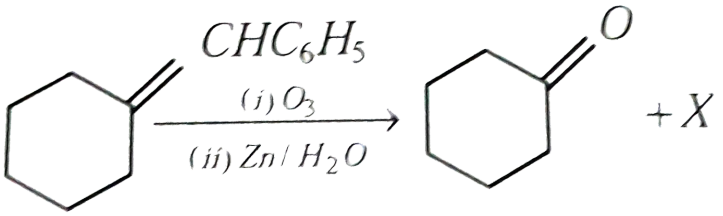
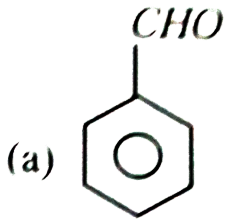
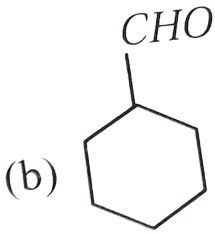
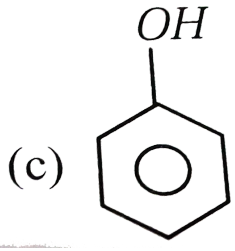
18. Identify the compound X in the following reaction

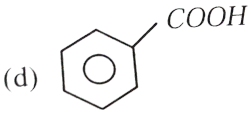


A.



B. 

C. 

D. 

Answer: A

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19. Propane cannot be prepared from which reaction

A. $CH_3 - CH = CH_2 \xrightarrow[OH^-]{B_2H_6}$

B. $CH_3CH_2CH_2I \xrightarrow[P]{HI}$

C. $CH_3CH_2CH_2Cl \xrightarrow{Na}$

D. None of these

Answer: A

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20. The best method for the preparation of 2,2-dimethylbutane is via the reaction of

A. Me_3CBr and $MeCH_2Br$ in Na/ether

B. $(Me_3C)_2CuLi$ and $MeCH_2Br$

C. $(MeCH_2)_2CuLi$ and Me_3CBr

D. Me_3CMgI and $MeCH_2I$

Answer: B

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21. In the case homologous series of alkanes, which one of the following statements is incorrect

A. The members of the series are isomers of each other

B. The member of the series have similar chemical properties

C. The members of the series have the general formula C_nH_{2n+2}, where n is an interger

D. The difference between any two successive members of the series corresponds to 14 units of relative atomic mass

Answer: A

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22. $n-$ pentane and iospentane can be distinguished by

A. Br_2

B. O_3

C. Conc. H_2SO_4

D. $KMnO_4$

Answer: D

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23. Which of the following is formed as a result of biological oxidation of benzene in the body of the dog

A. Acrylic acid

B. Cinnamic acid

C. Maleic acid

D. Gluconic acid

Answer: B

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24. How many primary , secondary , tertiary and quanternary carbons are present in the following hydrocarbon

$CH_3 - CH(CH_3) - C(CH_3)_2 - CH_2 - CH(CH_3) - CH_2 - CH_3$

A.

Primary	secondary	Tertiary	Quanternary
6	2	2	1

B.

Primary	secondary	Tertiary	Quanternary
2	6	3	0

C.

Primary	secondary	Tertiary	Quanternary
2	4	3	2

D.

Primary	secondary	Tertiary	Quanternary
2	2	4	3

Answer: A

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JEE SECTION (Only one choice correct answer)

1. Main constituent of marsh gas is

A. C_2H_2

B. CH_4

C. H_2S

D. CO

Answer: B

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2. The most strained cycloalkane is :

A. Cyclopropane

B. Cyclobutane

C. Cyclopentane

D. Cyclohexane

Answer: A

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3. The halogen which is most reactions , in the halogenation of alkanes under sunlight is .....

A. Chlorine

B. Bromine

C. Iodine

D. All equal

Answer: A

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4. The bond order of individual carbon-carbon bond in benzene is

A. One

B. Two

C. Between one and two

D. One and two , alternately

Answer: C

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5. A gas on passing through ammonical solution of $AgNO_3$ does not give any precipitate but decolourises alkaline $KMnO_4$ solution. The gas may be:

A. CH_4

B. C_2H_6

C. C_2H_4

D. C_2H_2

Answer: C

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6. The compound $1, 2 -$ butadiene has :

A. Only sp-hybridized carbon atoms

B. Only sp^2-hybridized carbon atoms

C. Both sp and sp^2-hybridized carbon atoms

D. sp,sp^2 and sp^3 hybridized carbon atoms

Answer: D

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7. When propyne is treated with aqueous H_2SO_4 in the presence of $HgSO_4$, the major product is:

A. Propanal

B. propyl hydrogen sulphate

C. Acetone

D. Propanol

Answer: C

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8. Which of the following compounds does not dissolve in conc. H_2SO_4 even on warming ?

A. Ethylene

B. Benzene

C. Hexane

D. Aniline

Answer: C

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9. Baeyer's reagent is used in the laboratory for-

A. Alkaline permanganate solution

B. Acidified permanganate solution

C. Neutral permanganate solution

D. Aqueous bromine solution

Answer: A

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10. The compound that is most reactive towards electrophilic nitration is

A. Toluene

B. Benzene

C. Benzoic acid

D. Nitrobenzene

Answer: A

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11. In which of the following, addition of HBr does not takes place against markownikoff's rule or Anti-Markownikoff addition of HBr is not observed for

A. Propene

B. But-1-ene

C. But-2-ene

D. Pent-2-ene

Answer: C

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12. Which of the following contains acidic hydrogen?

A. Ethyne

B. Ethene

C. Ethane

D. Benzene

Answer: A

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13. The highest boiling point is expected for

A. Iso-butane

B. n-octane

C. 2,2,3,3-tetramethyl butane

D. n-butane

Answer: B

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14. 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

Watch Video Solution

15. Condition for maximum yield of C_2H_5Cl is

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

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

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

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

Answer: A

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16. n-propyl bromide on treatment with ethanolic potassium hydroxide produces

A. Propane

B. Propene

C. Propyne

D. Propanol

Answer: B

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17. 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

Watch Video Solution

18. A reaction between methyl magnesium bromide and ethyl alcohol gives

A. Metane

B. Ethane

C. Propane

D. Butane

Answer: A

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19. The compound which has one isopropyl group is

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

B. 2,2 dimethyl pentane

C. 2,2,3-trimethyl pentane

D. 2-methyl pentane

Answer: D

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20. 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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21. In the fractional distillation of crude petroleum

A. Petrol condenses at the bottom of the column

B. The gases condense at the top of the column

C. High boiling constituents condense at the bottom of the column

D. High boiling constituents condense at the top of the column

Answer: C

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22. Gasoline is the name of

A. Crude oil

B. The gaseous constituents of petroleum

C. The mixture of uncondensed gases produced in the distillation of crude oil

D. The mixture of the residue and gas oil obtained in the distillation of crude oil

Answer: B

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23. In the process of cracking

A. Organic compounds decompose into their constituent elements

B. Hydrocarbons decompose into carbon and hydrogen

C. High molecular weight organic compounds decompose to gives low molecular weight organic compounds

D. Hydrocarbons yield alkyl radicals and hydrogen

Answer: C

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24. The octane number has zero value for

A. Iso-octane

B. n-hexane

C. n-heptane

D. Iso-heptane

Answer: C

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25. The inorganic origin of petroleum is indicated by the fact that

A. It constituents can be separated by fractional distillation

B. Carbon and hydrocarbon can combine by absorption of solar energy to give hydrocarbons

C. Petroleum contains traces of chlorophyll

D. Oil fields are located with the help of seismograph

Answer: B

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26. A mixture of ethyl iodide and n-propyl iodide is subjected to Wurtz reaction. The hydrocarbon that will not be formed is

A. n-butane

B. n-propane

C. n-pentane

D. n-hexane

Answer: B

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27. Which one of the following compounds gives methane on treatement with water?

A. Al_4C_3

B. CaC_2

C. VC

D. SiC

Answer: A

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28. Alcoholic solution of KOH is used for ,

A. Dehydration

B. Dehydrogenation

C. Dehydrohalogenation

D. Dehalogenation

Answer: C

Watch Video Solution

29. The dehydrohalogenation of neopentyl bromide with alcoholic KOH mainly gives

A. 2-methyl-1-butene

B. 2-methyl-2-butene

C. 2,2-dimethyl-1-butene

D. 2-butene

Answer: B

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30. Dilute aqueous $KMnO_4$, at room temperature reacts with R-CH=CH-R to give

A. R-CHO

B. R-COOH

C. RCHOH-CHOHR

D. $CO_2 + H_2O$

Answer: C

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31. Aqueous sulphuric acid reacts with 2-methyl-1-butene to give predominantly-

A. Isobutyl hydrogen sulphate

B. 2-methyl-2-butanol

C. 2-methyl-1-butanol

D. Secondary butyl hydrogen sulphate

Answer: B

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32. The olefin which on ozonolysis gives CH_3CH_2CHO and CH_3CHO is

A. 1-butene

B. 2-butene

C. 1-pentene

D. 2-pentene

Answer: D

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33. Which is most readily nitrated

A. Benzene

B. Phenol

C. Aniline

D. Nitrobenzene

Answer: B

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34. What is the chief product obtained

when n-butane is treated with bromine

in the presence of light at 130° C

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

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

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

D. $CH_3 - CH_2 - CH_2 - CH_2 - Br$

Answer: A

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35. When isobutyl bromide in dry ether is treated

with absolute ethyl alcohol, the products formed are

A. $CH_3 - \underset{CH_3}{\overset{|}{C}}\ H - CH_2OH$ and CH_3CH_2MgBr

B. $CH_3 - \underset{CH_3}{\overset{|}{C}}H - CH_2 - CH_2 - CH_3$ and Mg(OH)Br

C. $CH_3 - \underset{CH_3}{\overset{|}{C}}\ H - CH_3$ and $CH_3 - CH_2OMgBr$

D. $CH_3 - \underset{CH_3}{\overset{|}{C}}H - CH_3, CH_2 = CH_2$ and Mg(OH)Br

Answer: C

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36. The predominant product formed when $3-$ methyl $-2-$ pentene reacts with $HOCl$ is

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

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

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

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

Answer: C

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37. When acetylene is passed into dilute sulphuric acid containing Hg^{2+} ions, the product formed is

A. Acetone

B. Acetic acid

C. Acetaldehyde

D. Formaldehyde

Answer: C

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38. When cyclohexane is poured in water, it floats because:

A. Cyclohexane is in boat form

B. Cyclohexane is in chair form

C. Cyclohexane is in crown form

D. cyclohexane is less dense than water

Answer: D

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39. In the reaction of p-chlorotoluene with KNH_2 is liguid NH_3 the major product is .

A. o-toluidine

B. m-toluidine

C. p-toluidine

D. p-chloroaniline

Answer: B

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40. The number of possibel enantiomeric paira that can be produced during monochlorination of 2-methyl butane is :

A. 2

B. 3

C. 4

D. 1

Answer: A

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

A. $CH_3\overset{\cdot}{C}HCH_2Cl$

B. $CH_3\overset{+}{C}HCH_3$

C. $CH_3CH_2\overset{\cdot}{C}H_2$

D. $CH_3CH_2\overset{+}{C}H_2$

Answer: B

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42. 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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43. Which one of the following statements on the nitration of aromatic compounds is false?

A. The rate of nitration of benzene is almost the same as that of hexadeutrobenzene

B. The rate of nitration of toluene is greater than that of benzene

C. The rate of nitration of benzene is greater than that of hexadeuterobenzene

D. Nitration is an electrophilic substitution reaction

Answer: C

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44. Nitrobenzenen can be prepared from benzene by using a mixture of conc HNO_3 and conc. H_2SO_4 in the nitrating mixture. Nitric acid acts as a

A. Base

B. Acid

C. Reducing agent

D. Catalyst

Answer: A

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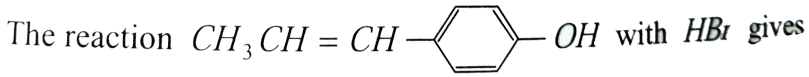
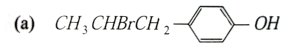
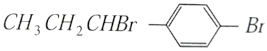
45. Complete the following reaction

The reaction  with HBr gives

A. (a) 

B. (b) 

C. (c) 

D. 

Answer: B

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46. Assertion: Addition of Br_2 to 1-butane gives two optical isomers.

Reason: The product contains one asymmetric carbon atoms.

A. Both assertion and reason are correct and reason is the correct explanation of the assertion

B. Both assertion and reason are correct but reason is not the correct explanation of the assertion

C. Assertion is correct, but reason is incorrect

D. Assertion is incorrect, but reason is correct

Answer: A

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

A. SO_2Cl_2

B. $SOCl_2$

C. Cl_2

D. NaOHCl

Answer: C

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48. At low temperatures, the slow addition of molecular bromine to $CH_2 = CH - CH_2 \equiv CH$ gives

A. $CH_2 = CH - CH_2 - CBr = CHBr$

B. $BrCH_2 - CHBr - CH_2 - C \equiv CH$

C. $CH_2 = CH - CH_2 - CH_2 - CBr_3$

D. $CH_3 - CBr_2 - CH_2 - C \equiv CH$

Answer: A

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49. $CH_3C \equiv CCH \xrightarrow[(ii)\, H_2O/Zn]{(i)\, X} CH_3 - \underset{\underset{O}{||}}{C} - \underset{\underset{O}{||}}{C} - CH_3$

X in the above reaction is

A. HNO_3

B. O_2

C. O_3

D. $KMnO_4$

Answer: C

Watch Video Solution

50. In the compound

$CH_2 = CH - CH_2 - CH_2 - C \equiv CH$ the $C_2 - C_3$ bond is of

A. $sp - sp^2$

B. $sp^3 - sp^3$

C. $sp - sp^3$

D. $sp^2 - sp^3$

Answer: D

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51. 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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52. The product(s) obtained via oxymercuration $(HgSO_4 + H_2SO_4)$ of 1-butyne would be:

A. $CH_3 - CH_2 - \overset{O}{\overset{||}{C}} - CH_3$

B. $CH_3 - CH_2 - CH_2 - CHO$

C. $CH_3 - CH_2 - CHO + HCHO$

D. $CH_3CH_2COOH + HCOOH$

Answer: A

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53. The alakene C_6H_{10} producing $OHC(CH_2)_4CHO$ on ozonolysis is :

A. Hexene-1

B. Hexene -3

C. Cyclohexene

D. 1-methylcyclohexene-1

Answer: C

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54. The function of anhydous $AlCl_3$ in the Friedel Craft reaction is to

A. Absorb water

B. Absorb HCl

C. To produce electrophile

D. To produce nucleophile

Answer: C

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55. Catalytic dehydrogenation of n-heptane in presence of Cr_2O_3 / Al_2O_3 at 750 K gives

A. Iso-heptane

B. 1-heptane

C. Toluene

D. 2,3-dimethylpentene-1

Answer: C

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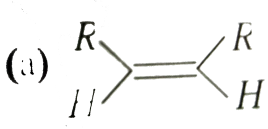
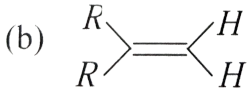
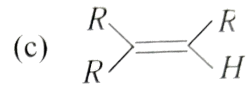
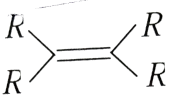
56. Which of the following alkenes will react fastest with H_2 under catalytic hydrogenation conditions

A. 

B. 

C. 

D. (d) 

Answer: A

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57. Assertion: But-1-ene on reaction with HBr in the presence of peroxide produces 1-bromobutane.

Reason: It invovles the formation of a primary free radical.

A. Both assertion and reason are correct and reason is the correct explanation of the assertion

B. Both assertion and reason are correct but reason is not the correct explanation of the assertion

C. Assertion is correct, but reason is incorrect

D. Assertion is incorrect, but reason is correct

Answer: C

Watch Video Solution

58. One mole of each of the following alkenes is catalytically hydrogenated. The quantity of heat evolved will be the lowest in the case of

A. 1-butene

B. trans-2-butene

C. cis-2-butene

D. 1,3-butadiene

Answer: D

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59. Which of the following are formed on addition reaction of DCl with 3-methyl-1-butene

A. $CH_2DCHClCH(CH_3)_2$

B. $CH_2DCH_2CCl(CH_3)_2$

C. $CH_3CDClCH(CH_3)_2$

D. $ClCH_2CHDCH(CH_3)_2$

Answer: A

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60. The reagent which is used to distinguish between propene and propyne is

A. Bromine

B. Alkaline $KMnO_4$

C. Ammoniacal $AgNO_3$

D. Ozone

Answer: C

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61. The structure of the product(Z) in the reactions given below

$$HC \equiv CH \xrightarrow[H^+]{NaNH_2 . CH_3COCH_3} X \xrightarrow[H_2O]{Hg^{2+}, H_3O^+} \text{Z is}$$

A. $CH_3 - CH_2 - CH_2 - \overset{\overset{O}{||}}{C} - CH_2OH$

B. $CH_3 - \underset{\underset{O}{||}}{C} - \overset{\overset{CH_3}{|}}{C}H - CH_2OH$

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

D. $CH_3 - CHOH - \overset{\overset{CH_3}{|}}{C}H - CHO$

Answer: C

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62. The reagent X in the reactions

$$(CH_3)_3CCH = CH_2 \xrightarrow[\text{THF}]{X} Y \xrightarrow[\text{NaOH}]{NaBH_2} (CH_3)_3 - \underset{\underset{OH}{|}}{C} - CH - CH_3$$

A. H_3O^+

B. $Hg(CH_3COO)_2$

C. OH^-

D. HCOOH

Answer: B

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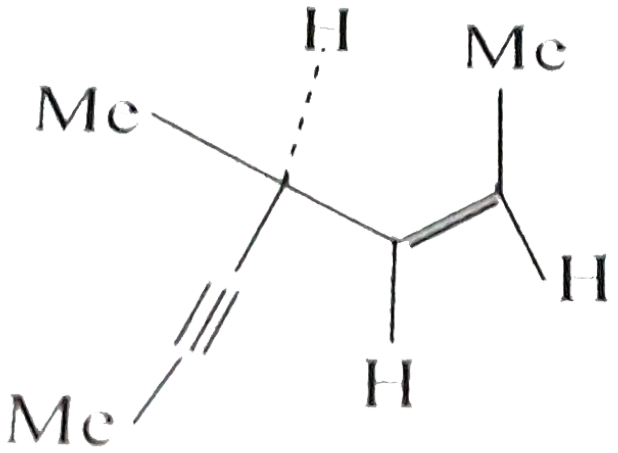
63. Hydrogenation of the adjoining compound in the presence of poisoned palladium catalyst gives



A. An optically active compound

B. An optically inactive compound

C. A racemic mixture

D. A diastereomeric mixture

Answer: B

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64. 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 cases

Answer: C

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65. Assertion:(i)Dimethyl sulphide is commonly used for the reduction of an ozonide of an alkene to get the carbonyl compound (ii)Addition of bromine to trans-2-butene yields meso-2,3-dibromo butane.

Reason:(i)It reduces the ozonide giving water soluble dimethyl sulphoxide and excess of it evaporates (ii)Bromine addition to an alkene is an electrophilic addition

A. Both assertion and reason are correct and reason is the correct explanation of the assertion

B. Both assertion and reason are correct but reason is not the correct explanation of the assertion

C. Assertion is correct, but reason is incorrect

D. Assertion is incorrect, but reason is correct

Answer: A

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

A. H^+ in the first step

B. Cl^+ in the first step

C. OH^- in the first step

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

Answer: B

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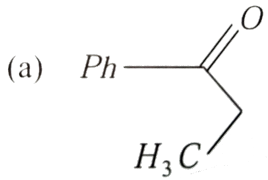
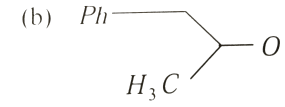
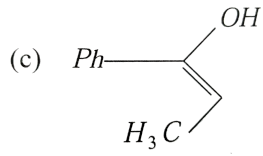
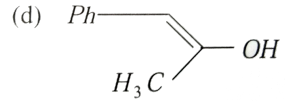
67. $Ph - C \equiv C - CH_3 \xrightarrow{Hg^{2+} / H^+} A$, A is

A.



B. 

C. 

D. 

Answer: A

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68. Identify a reagent from the following list which can easily distinguish between 1-butyne and 2-butyne.

A. Bromine , CCl_4

B. H_2, Lindlar catalyst

C. Dilute H_2SO_4, $HgSO_4$

D. Ammonical Cu_2Cl_2 solution

Answer: D

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69. Condiser the following reaction,

$$CH_3 - \underset{D}{CH} - \underset{CH_3}{CH} - CH_3 + Br_2 \rightarrow X + HBr$$

Identify the structure of major product X.

A. $H_3C - \underset{D}{CH} - \underset{CH_3}{CH} - \dot{C}H_2$

B. $H_3C - \underset{D}{CH} - \underset{CH_3}{\dot{C}} - CH_3$

C. $H_3C - \underset{D}{\dot{C}} - \underset{CH_3}{CH} - CH_3$

D. $H_3C - \dot{C}H - \underset{CH_3}{CH} - CH_3$

Answer: B

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70. The nodal plane in the π-bond of ethene is located in:

A. The molecular plane

B. A plane parallel to the molecular plane

C. A plane perpendicular to the molecular plane with bisects the carbon-carbon σ-bond at right angle

D. A plane perpendicular to the molecular plane which contains the carbon carbon σ bond

Answer: A

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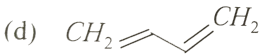
71. Which of the following represents the given mode of hybridization $sp^2 sp^2 sp - sp$ from left to right ?

A. $H_2C = CH - C \equiv CH$

B. $HC \equiv C - C \equiv CH$

C. $H_2C = C = C = CH_2$

(d) 

D.

Answer: A

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72. $2-$ Phenyl propene on acidic hydration gives ,

A. 2-phenyl-2-propanol

B. 2-phenyl-1-propanol

C. 3-phenyl-1-propanol

D. 1-phenyl-2-propanol

Answer: A

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73. 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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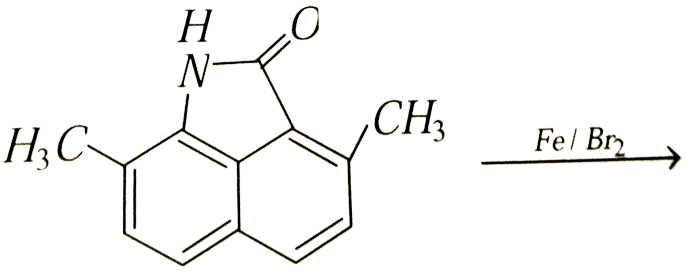
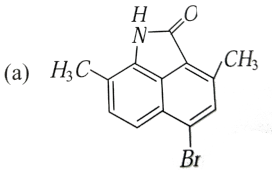
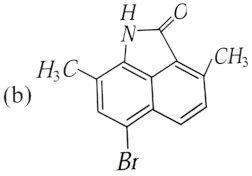
74. Product on monobromination of this compound is



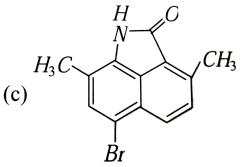
A.



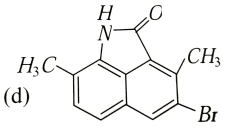
B.



C.



D.



Answer: D

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75. The product of acid catalyzed hydration of $2-$ pheny1propene is

A. 3-phenyl-2-propanol

B. 1-phenyl-2-propanol

C. 2-phenyl-2-propanol

D. 2-phenyl-1-propanol

Answer: C

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76. Which of the following used for conversion of 2-hexyne into trans-2-hexene?

A. $H_2 / Pd / BaSO_4$

B. H_2, PtO_2

C. $NaBH_4$

D. $Li - NH_3 / C_2H_5OH$

Answer: D

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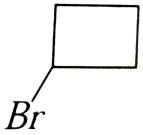
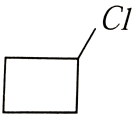
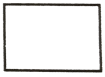
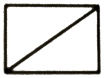
77. What would be the produt formed when 1-bromo-3 chorocyclobutane reacts with two equivalents of metallic sodium in ether ? .

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: D

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78. $CH_3 - CH = CH_2 + NOCl \rightarrow P$, Identify the adduct.

A. $CH_3 - \underset{\underset{Cl}{|}}{CH} - \underset{\underset{NO}{|}}{CH_2}$

B. $CH_3 - \underset{\underset{Cl}{|}}{CH} - \underset{\underset{NO}{|}}{CH_2}$

C. $CH_3 - CH_2 - \underset{\underset{Cl}{|}}{\overset{\overset{NO}{|}}{C}H}$

D. $\underset{\underset{NO}{|}}{CH_2} - CH_2 - \underset{\underset{Cl}{|}}{CH_2}$

Answer: A

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

A. Benzoyl chloride

B. Benzyl chloride

C. o- and p- chlorotoluene

D. m-chlorotoluene

Answer: C

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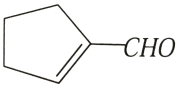
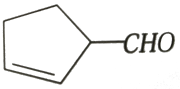
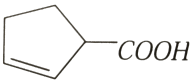
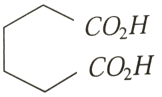
80. Cyclohexene on ozonolysis followed by reaction with zinc dust and water gives compound E. Compound E on furhter treatment with aqueous KOH yields compound F. Compound F is

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A

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81. The synthesis of 3-octyne is achieved by adding a bromoalkane into a mixture of sodium amide and an alklyne. The bromo alkane and alkyne respectively are:

A. $BrCH_2CH_2CH_2CH_2CH_3$ and $CH_3CH_2C \equiv CH$

B. $BrCH_2CH_2CH_3$ and $CH_3CH_2CH_2C \equiv CH$

C. $BrCH_2CH_2CH_2CH_2CH_3$ and $CH_3CH_2C \equiv CH$

D. $BrCH_2CH_2CH_2CH_3$ and $CH_3CH_2C \equiv CH$

Answer: D

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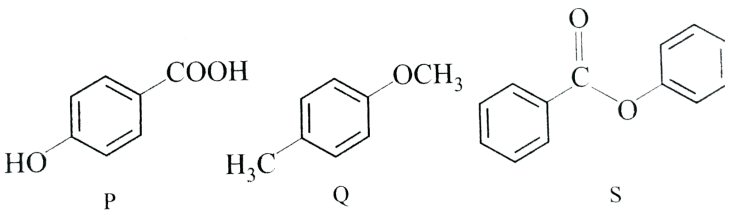
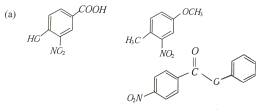
82. The compound P, Q and S

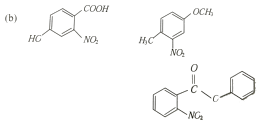


were separately subjected to nitration using HNO_3 / H_2SO_4mixture. The major product formed in each case respectively is

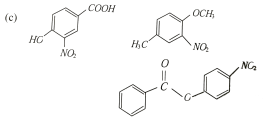
A.



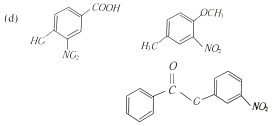
B.



C.



D.



Answer: C

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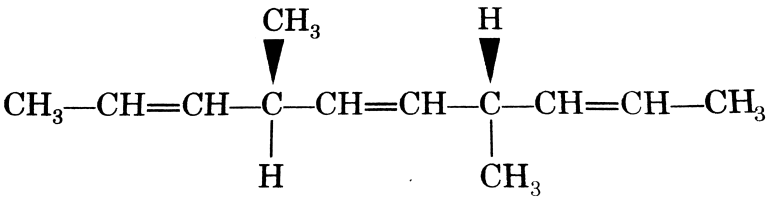
83. The number of optically active products obtained from the complete ozonolysis of the given compound



is :

A. 0

B. 1

C. 2

D. 4

Answer: A

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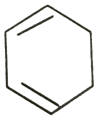
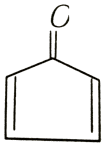
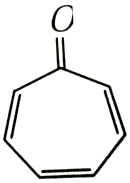
84. Which of the following molecules, in pure form, is /are ustable at room temperature?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B

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85. In the reaction

$$CH_3COOH \xrightarrow{LiAlH_4} A \xrightarrow{PCl_5} B \xrightarrow{Alc.KOH} C$$

The product C is

A. Acetaldehyde

B. Acetylene

C. Ethylene

D. Acetyl chloride

Answer: C

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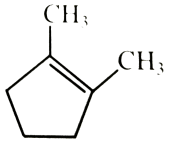
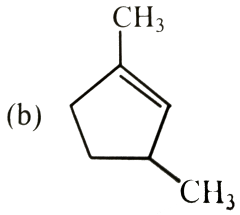
86. Which compund will yield 5-keto -2 methyl hexanal upon treatment with O_3?

A.

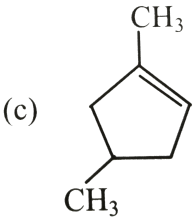
(a)



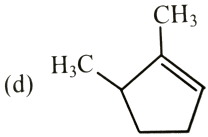
B.



C.



D.



Answer: B

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87. In the following sequence of reactions:

Toluene $\xrightarrow{KMnO_4} A \xrightarrow{SOCl_2} B \xrightarrow[BaSO_4]{\frac{H_2}{Pd}} C$

the product C is

A. C_6H_5COOH

B. $C_6H_5CH_3$

C. $C_6H_5CH_2OH$

D. C_6H_5CHO

Answer: D

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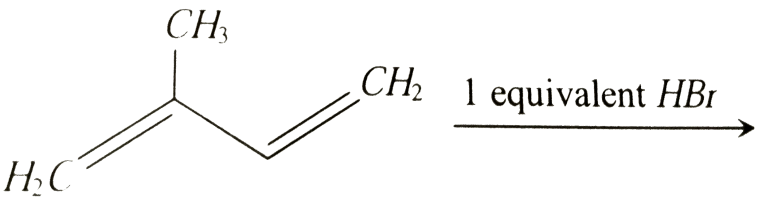
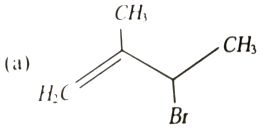
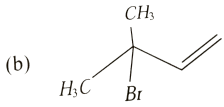
88. In the following reaction, the major product is



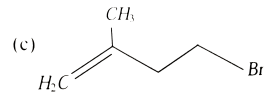
A.



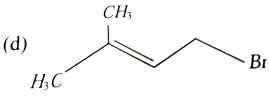
B.



C.



D.



Answer: D

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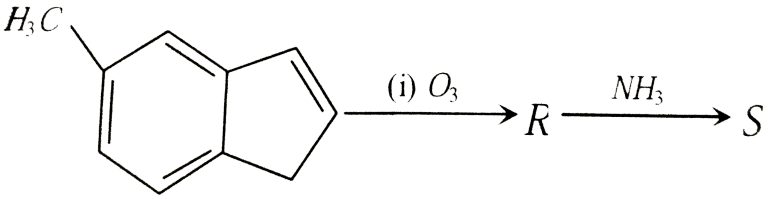
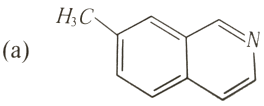
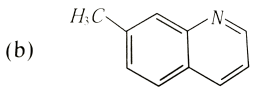
89. In the following reactions, the product S is

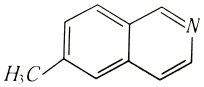


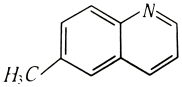
A.



B.



C. (c) 

D. (d) 

Answer: A

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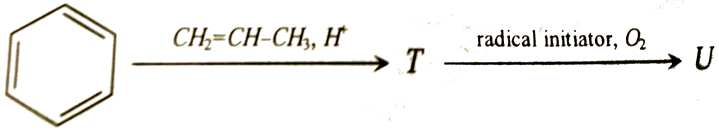
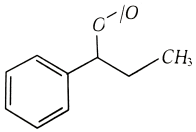
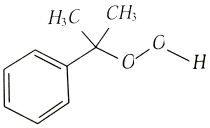
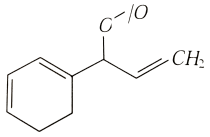
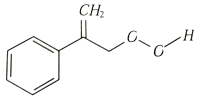
90. The major product U in the following reactions is



A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B

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91. The reaction of propene with $HOCI(CI_2 + H_2O)$ proceeds through the intermediate:

A. $CH_3 - CH^+ - CH_2 - Cl$

B. $CH_3 - CH(OH) - CH_2^+$

C. $CH_3 - CHCl - CH_2^+$

D. $CH_3 - CH^+CH_2 - OH$

Answer: A

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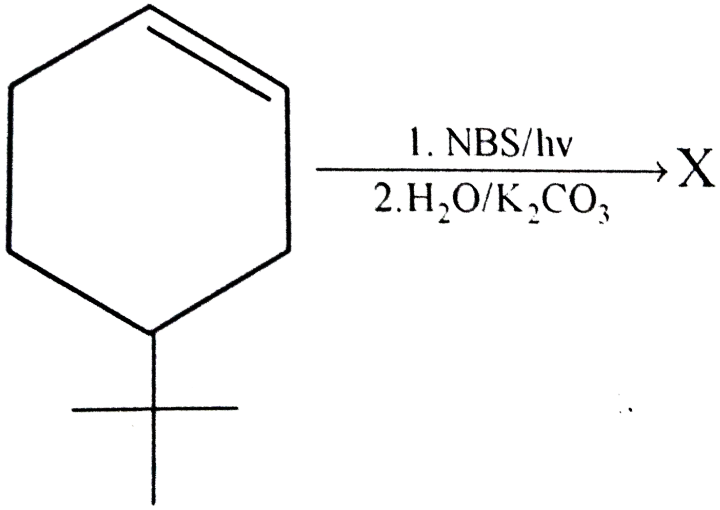
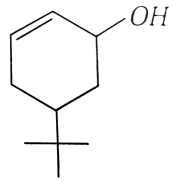
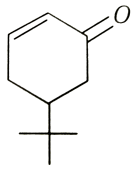
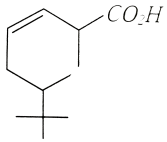
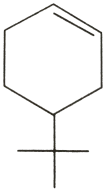
92. The product of the reaction given below is:



A. (a) 

B. (b) 

C. (c) 

(d) 

D.

Answer: A

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93. The trans-alkenes are formed by the reduction of alkynes with

A. $NaBH_4$

B. $Na / liq.\ NH_3$

C. Sn-HCl

D. $H_2 / Pd / C, BaSO_4$

Answer: B

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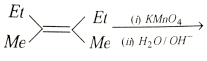
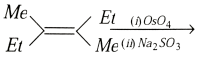
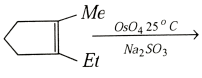
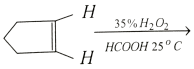
JEE SECTION (More than one choice correct answer)

1. Which of the following will give cis-diols?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A::B::C

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2. Toluene, when treated with Br_2/Fe gives p-bromotoluene as the major product, because the CH_3 group:

A. is para-directing

B. is meta-directing

C. Activates the ring to hyperconjugation

D. Deactivates the ring

Answer: A::C

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3. An aromatic molecule will

A. Have $4r\pi$-electrons

B. Have (4n+2)π-electrons

C. Be planar

D. Be cyclic

Answer: B::C::D

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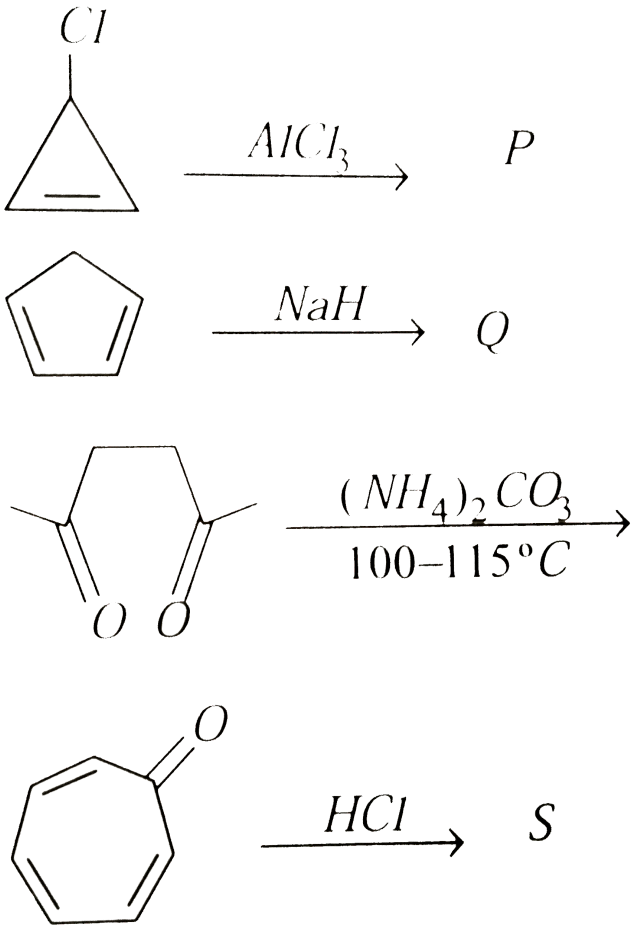
4. Among P,Q,R and S , the aromtic compound(s) is /are



A. P

B. Q

C. R

D. S

Answer: A::B::C::D

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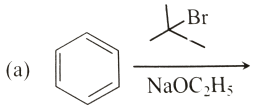
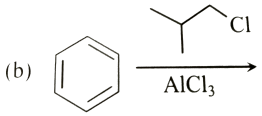
5. Among the following reactions (s), which gives (give) tert-butyl benzene as the major product?

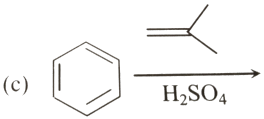
A.



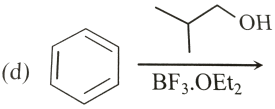
B.



C.



D.



Answer: B::C::D

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6. The correct statement(s) about the following reaction sequence is (are)

Cumene $(C_9H_{12}) \xrightarrow[(ii)\, H_3O^+]{(i)\, O_2} P \xrightarrow{CHCl_3 / NaOH}$

Q(major)+R(minor), $Q \xrightarrow[PhCH_2Br]{NaOH} S$

A. R is steam volatile

B. Q gives dark violet coloration with 1% aqueous $FeCl_3$ solution

C. S gives yellow precipitate with 2,4-dinitrophenylhydrazine

D. S gives dark violet colouration with 1% aqueous $FeCl_3$ solution

Answer: B::C

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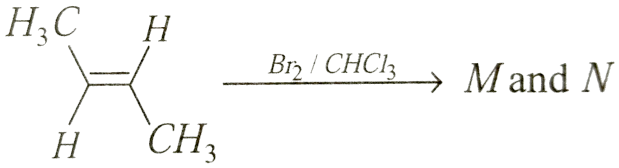
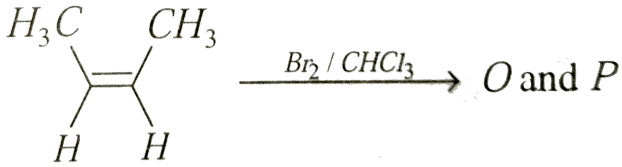
7. The correct statement for the following addition reactions is (are)

(i) 

(ii) 

A. (M and O) and (N and P) are two pairs of enantiomers

B. Bromination proceeds through trans-addition in both the reactions

C. O and P are identical molecules

D. (M and O) and (N and P) are two pairs of diastereomers

Answer: B::D

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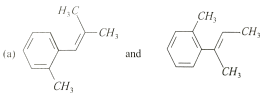
8. Compound p and R upon ozonolysis produce Q and S, respectively . The molecular fromular of Q and S id C_8H_8O. Q undergoes Cannizzaro reaction but not halofrom reaction , whereas S undergoes halofrom reaction but not Cannizzaro reaction .

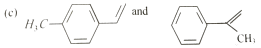
$$(i)\, P \xrightarrow[(ii)\, Zn/H_2O]{(i)\, O_3/CH_2Cl_2} Q \quad (C_8H_8O)$$

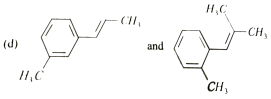
$$\text{(ii)}\ R \xrightarrow[(ii)\, Zn/H_2O]{(i)\, O_3/CH_2Cl_2} S \quad (C_8H_8O)$$

The option (s) with suitable combination of P and R, respectively , is(are)

A. 

B. 

C. 

D. 

Answer: C::D

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9. Octane number of petrol (gasoline) can be increased by

A. Aromatisation

B. Cracking

C. By adding anti-knocking agent

D. Nitration

Answer: A::B::C

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10. During the preparation of alkanes by

Kolbe's electrolytic decarboxylatio of CH_3CH_2COONa ,

which of the following products are formed

A. $CH_3CH_2CH_2CH_3$

B. $CH_2 = CH_2$

C. CH_4

D. CH_3CH_2OH

Answer: A::B::D

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11. During the Kolbe's electrolytic decarboxylation of CH_3COONa

A. H_2 is liberated at cathode because discharge potential of H^+ is less than discharge potential of Na^+

B. CH_3COO^- is discharged preferentially at anode than OH^- because discharge potential of CH_3COO^- is less than discharge potential of OH^-

C. NaOH is discharged at cathode

D. CO_2 is liberated at anode along with alkane

Answer: A::B::D

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12. Which of the following statements are correct during halogenation of alkane

A. The yield of the alkyl halide depends upon the bond dissociation energy of the type of C-H bond

B. The yield of the alkane depends upon the number of a particular type of C-H available

C. The fluoro compounds cannot be prepared because of high bond energy of F-F

D. Iodo compounds cannot be prepared by this method because the backward reaction is thermodynamically more favourable

Answer: A::B::D

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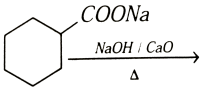
13. Which of the following methods yield saturated hydrocarbon?

A. $RCH = CH_2 \xrightarrow[(ii)\, CH_3COOH]{(i)\, BH_3}$

B. $CH_2 = CH - R \xrightarrow{CH_2N_2}$

C. $Br - CH_2 - CH_2 - CH_2 - CH_2 - CH_2 - Br \xrightarrow[\Delta]{\text{Na/Ether}}$

D. (d) 

Answer: A::B::C::D

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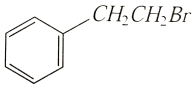
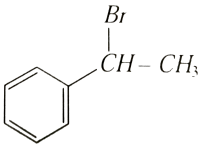
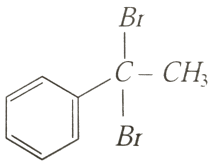
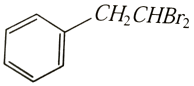
14. When ethylbenzene is brominated, then which of the following products can be obtained in major amounts

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B::C

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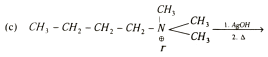
15. In which of the following Hoffmann elimination product is more ?

A. $CH_3 - \underset{CH_3}{\overset{CH_3}{\underset{|}{\overset{|}{C}}}} - \underset{OH}{\underset{|}{CH}} - CH_3 \xrightarrow[\Delta]{Conc.\,H_2SO_4}$

B. $CH_3 - \underset{CH_3}{\overset{CH_3}{\underset{|}{\overset{|}{C}}}} - \underset{Br}{\underset{|}{CH}} - CH_3 \xrightarrow[\text{t-butoxide}]{\text{Potassium}}$

C. 

D. $CH_3 - \underset{CH_3}{\overset{CH_3}{\underset{|}{\overset{|}{C}}}} - CH_2 - Cl \xrightarrow[\Delta]{\text{alc KOH}}$

Answer: B::C

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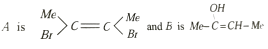
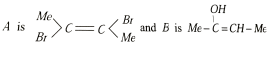
16. When 2-butyne is brominated, A is formed . When 2-butyne is reacted with $HgSO_4$ and H_2SO_4 , then B is formed which then gives C . Hence

A. 

B. 

C. B is $Me - \underset{\underset{OH}{|}}{C} = CH - Me$ and C is $Me - \overset{\overset{O}{||}}{C} - CH_2 - CH_3$

D. B is $Me - \underset{\underset{OH}{|}}{\overset{\overset{OH}{|}}{C}} = CH - Me$ and C is $Me - \overset{\overset{O}{||}}{C} - CH_2 - CH_3$

Answer: B::C

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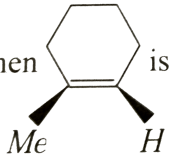
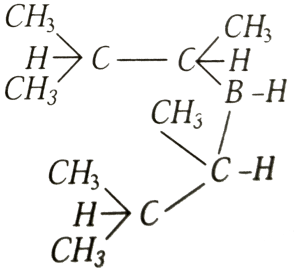
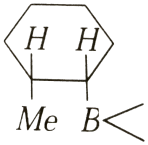
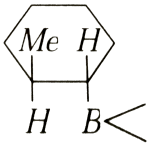
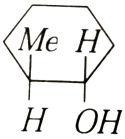
17.

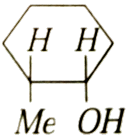
When  is reacted with 

Followed by treatment with H_2O_2/OH^- , then the different products formed at different stages are

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B::C

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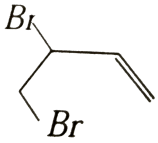
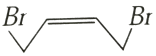
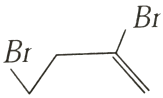
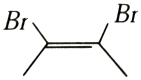
18. When  is reacted with Br_2 (1-equivalent) would give

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A::B

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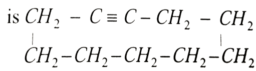
19. $\underset{X}{H - C \equiv CLi} + \underset{Y}{Br \leftarrow CH_2 \rightarrow_8 Br} \longrightarrow A \xrightarrow{CH_3Li} B \longrightarrow C.$

In this reaction sequences

A. A is $H - C \equiv C - (CH_2)_8 - Br$

B. B is $H - C \equiv C - H$ and C is $LiC \equiv C - (CH_2)_8 - Br$

C. B is $LiC \equiv C - (CH_2)_8 - Br$ and C is 

D. (d) B is $LiC \equiv C - (CH)_8 - Br$ and C is $Br \leftarrow CH_2 \rightarrow_8 C \equiv C \leftarrow CH_2 \rightarrow_8 Br$

Answer: A::C

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20. When $CH_2 = CH - Br$ is reacted with HBr then the product formed is A and when $CH_2 = CH - COOH$ is treated with HBr then the product formed is C. Hence here

A. A is $\underset{Br}{CH_2} - \underset{Br}{CH_2}$

B. (b) A is $CH_3 - CH\begin{<}{Br}{Br}$

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

D. C is $\underset{\underset{Br}{|}}{CH_2} - CH_2 - COOH$

Answer: B::D

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21. Which of the following reaction will give an alkyne?

A. $CH_3CH_2\underset{\underset{Cl}{|}}{CH} - \underset{\underset{Cl}{|}}{CH_2} \xrightarrow[NaNH_2]{H_2O}$

B. $CH_3CH_2CHBr_2 \xrightarrow[\Delta]{\text{alc KOH}}$

C. $CH_3 - \overset{\overset{Br}{|}}{\underset{\underset{Br}{|}}{C}} - \overset{\overset{Br}{|}}{\underset{\underset{Br}{|}}{C}} - CH_3 \xrightarrow{\text{Zn/alcohol}}$

D. Potassium maleate $\xrightarrow{\text{electrolysis}}$

Answer: A::B::C::D

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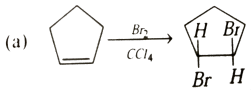
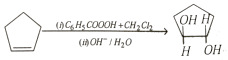
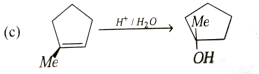
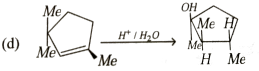
22. Which of the following reactions are correct

A. 

B. 

C. 

D. 

Answer: A::B::C

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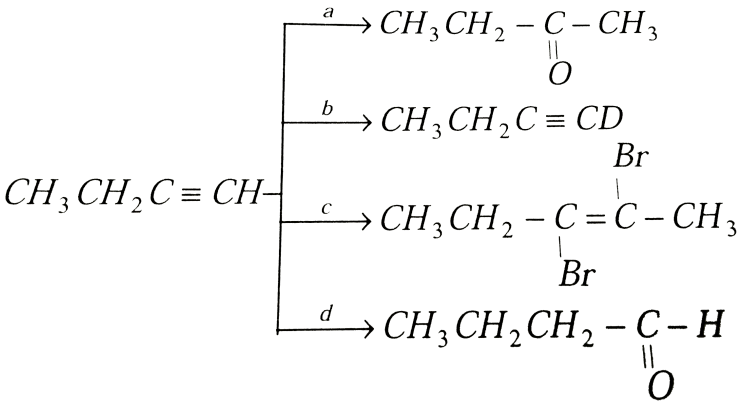
23. In the given conversion given below



A. $H_2O / Hg^{2+} / H^+$

B. (i)One equivalent of LDA, (ii)D_2O

C. Br_2 / CCl_4

D. (i)$(Sil)_2BH$ (ii)H_2O_2 / OH^-

Answer: A::B::D

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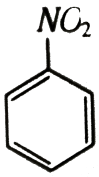
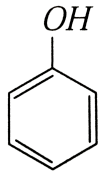
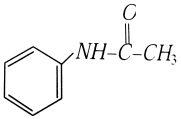
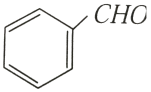
24. Which of the following are highly reactive towards electrophile

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B::C

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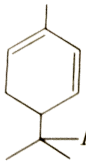
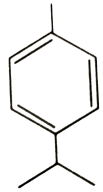
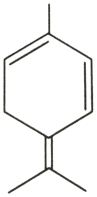
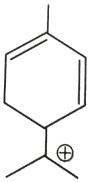
25. Complete the following reaction

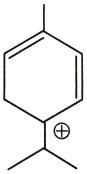
When 

is reacted with conc. H_2SO_4 and heated then the intermediates and products formed are

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A::B::C::D

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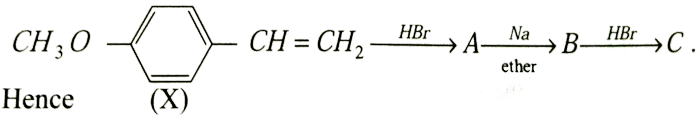
26.



Hence (X)

A. (a) Compound A is CH_3O–C$_6$H$_4$–$CH(Br)CH_3$

B. (b) Compounds A formedis CH_3O–C$_6$H$_4$–CH_2CH_2Br

C. (c) Compound B formed is CH_3O–C$_6$H$_4$–$(CH_2)_4$–C$_6$H$_4$–OCH_3

D. (d) Compound C formed is HO–C$_6$H$_4$–$CH(CH_3)CH_3$

Answer: A::D

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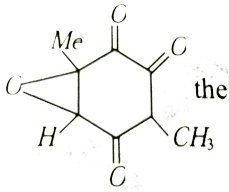
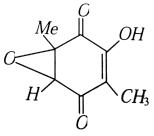
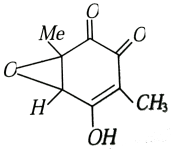
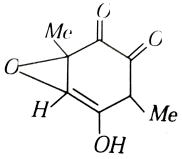
27. Complete the following reaction

For the compound  the different enols possible are

A. (a) 

B. (b) 

C. (c) 

D. Enolization is not possible

Answer: A::B

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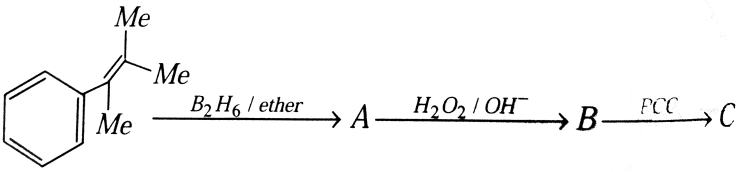
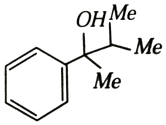
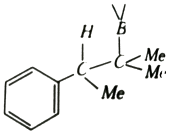
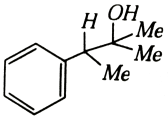
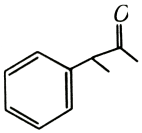
28. what are the product obtained in the reaction sequence given below



A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B::C

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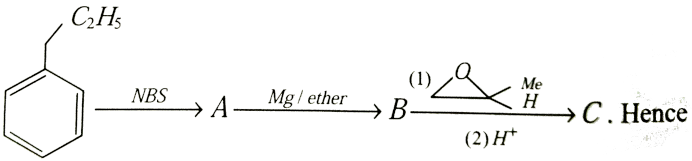
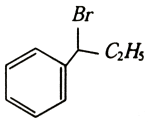
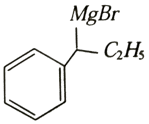
29. Complete the following reaction



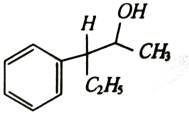
A.

(a) $A =$ 

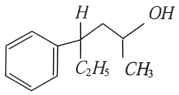
B.

(b) $B =$ 

C.

(c) $C =$ 

D.

(d) $C =$ 

Answer: A::B::D

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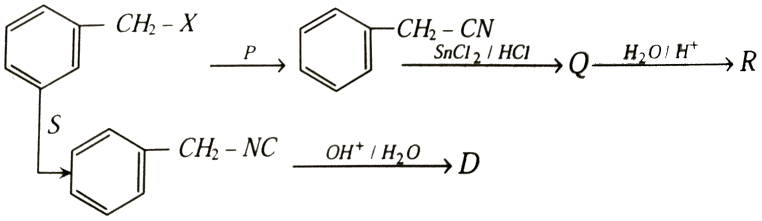
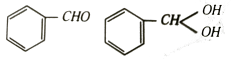
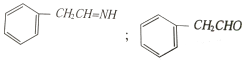
30. In the reaction sequence given below



A. (a) P, Q and K are respectively $AgCN$;

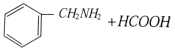


B. (b) P, Q and K are respectively KCN ;



C. S and D are respectively AgCN and none

D. (d) S and D are respectively $AgCN$ and



Answer: B::C

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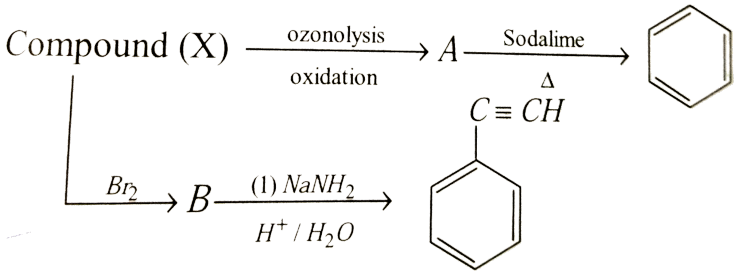
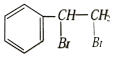
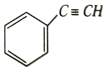
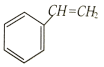
31. Complete the following reaction



A. (a) Compound $A =$

B. (b) Compound $B =$ 

C. (c) Compound $X =$ 

D. (d) Compound $X =$ 

Answer: A::B::D

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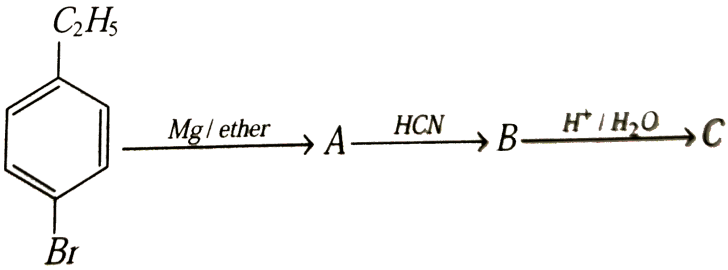
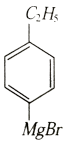
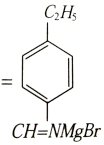
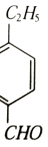
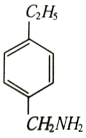
32.



A. (a) Compound $A =$ 

B. (b) Compound $B =$ 

C. (c) Compound $C =$ 

D. (d) Compound $C =$ 

Answer: A::B::C

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33. Which of the following statement is/are correct about benzene

A. It burns with scooty flame

B. It undergoes electrophilic substitution reaction

C. Its resonace energy is $36kcalmol^{-1}$

D. It is highly unsaturated and decolourises bromine water

Answer: A::B::C

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34. Which of the following are electrophile

A. SO_3

B. $-COCH_3$

C. H_3O^+

D. $(CH_3)_4N^+$

Answer: A::B

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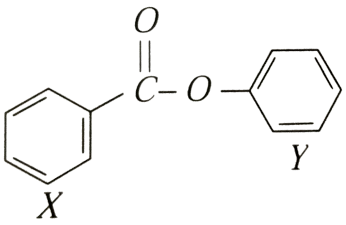
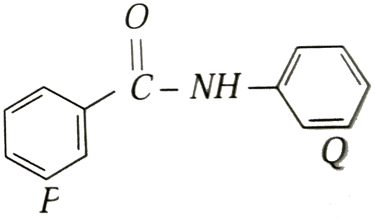
35. The $E^{\oplus}$ will attack which ring in the following compounds and wht is the rate of ESR in this



A



B

A. In A, ring X will take part in electrophilic substitution reaction

B. In A, ring Y will take part in electrophilic substitution reaction

C. In B, ring Q will take part in electrophilic substitution reaction

D. Compound B is more reactive than compound A

Answer: B::C::D

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JEE SECTION (Reasoning type questions)

1. Statement 1:Addition of Br_2 to 1-butene gives two optical isomers.

Statement 2:The product contains one asymmetric carbon

A. Statement 1 is true , statement 2 is true , statement 2 is a correct explanation for statement 1

B. Statement 1 is true , statement 2 is true , statement 2 is not a correct explanation for statement 1

C. Statement 1 is true , statement 2 is false

D. Statement 1 is false , statement 2 is true

Answer: A

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2. Assertion : $1-$ Butene on reaction with HBr in the presence of a peroxide produces $1-$ bromo $-$ butane

Reason : It involves the free radical mechanism.

A. Statement 1 is true , statement 2 is true , statement 2 is a correct explanation for statement 1

B. Statement 1 is true , statement 2 is true , statement 2 is not a correct explanation for statement 1

C. Statement 1 is true , statement 2 is false

D. Statement 1 is false , statement 2 is true

Answer: A

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3. Statement-1: Bromobenzene upon reaction with Br_2/Fe gives 1,4-dibromobenzene as the major product.

Statement-2: In bromobenzene the inductive effect of the bromo group is more dominant than the mesomeric effect in directing the incoming electrophile.

A. Statement 1 is true , statement 2 is true , statement 2 is a correct explanation for statement 1

B. Statement 1 is true , statement 2 is true , statement 2 is not a correct explanation for statement 1

C. Statement 1 is true , statement 2 is false

D. Statement 1 is false , statement 2 is true

Answer: C

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4. Assertion (A) Friedel - Crafts reaction benzene with n - propyl chloride on heating produce isopropyl benzene

Reason (R) Benzene undergoes electrophilic substitution easily.

A. Statement 1 is true , statement 2 is true , statement 2 is a correct explanation for statement 1

B. Statement 1 is true , statement 2 is true , statement 2 is not a correct explanation for statement 1

C. Statement 1 is true , statement 2 is false

D. Statement 1 is false , statement 2 is true

Answer: B

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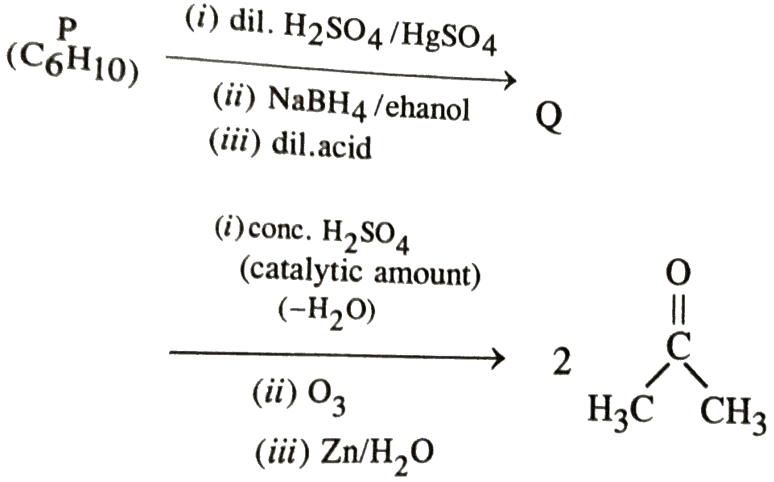
JEE SECTION (Comprehension type questions)

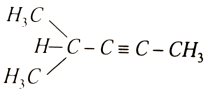
1. An acyclic hydrocarbon P, having molecular fromula C_6H_{10} gave acetone as the only organic product through the followig sequence of reaction in which Q is an intermediate organicn compound

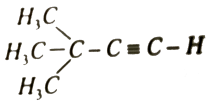


The structure of compound P is

A. $CH_3CH_2CH_2CH_2 - C \equiv C - H$

B. $H_3CH_2C - C \equiv CH_2CH_3$

C. (c) 

D. (d) 

Answer: D

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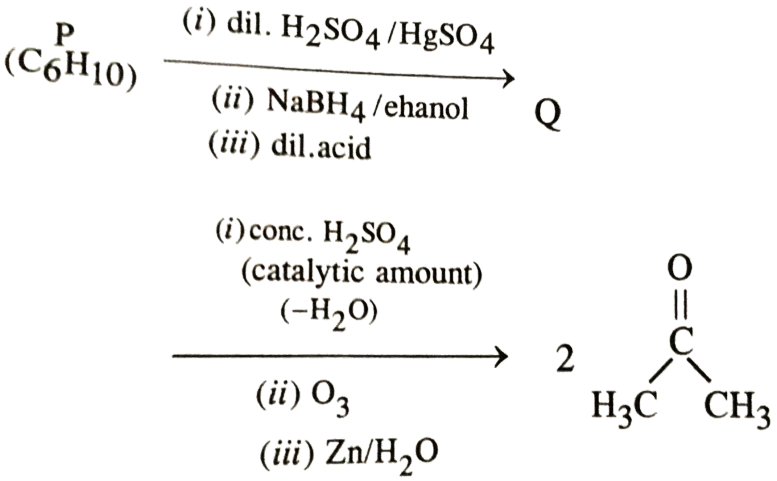
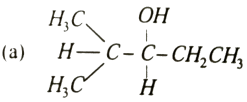
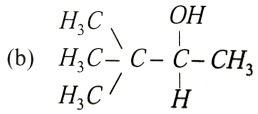
2. An acyclic hydrocarbon P, having molecular fromula C_6H_{10} gave acetone as the only organic product through the followig sequence of reaction in which Q is an intermediate organicn compound



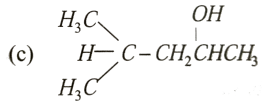
The structure of the compound Q is

A. (a) 

B.



C.



D. $CH_3CH_2CH_2\overset{OH}{\overset{|}{C}}HCH_3$

Answer: B

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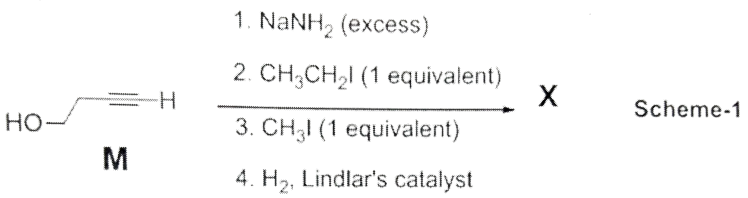
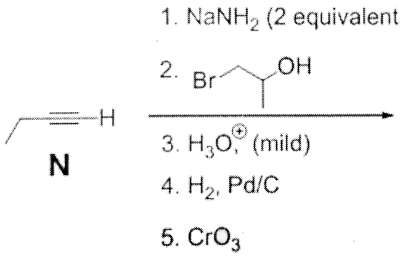
3. Schemes 1 and 2 describe sequential transformation of alkynes M and N. Consider only the major products formed in each step for both the schemes.



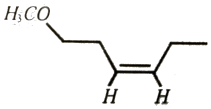
Scheme-1



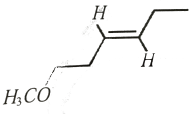
Scheme-2

The product X is

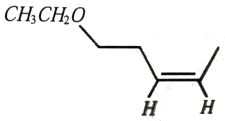
A. (a)



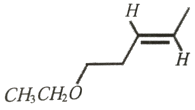
B. (b)



C. (c)



D. (d)



Answer: A

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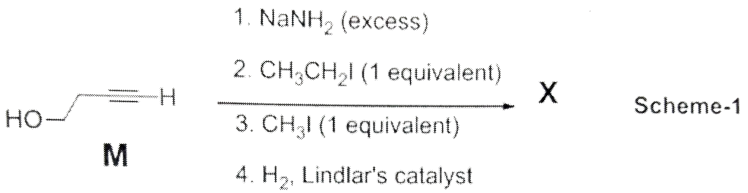
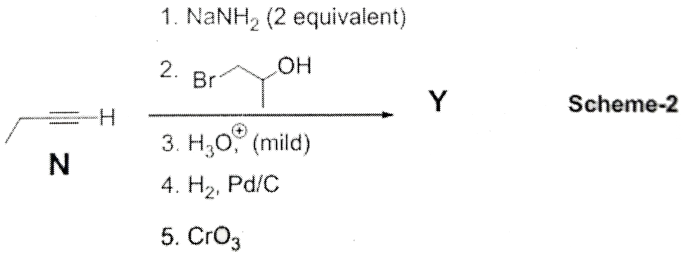
4. Schemes 1 and 2 describe sequential transformation of alkynes M and N. Consider only the major products formed in each step for both the schemes.



Scheme-1



Scheme-2

The product X is

A. It gives a positive Tollens test and is a functional isomer of X

B. It gives a positive Tollens test and is a geometrical isomer of X

C. It gives a positive iodoform test and is a functional isomer of X

D. It gives a positive iodoform test and is a geometrical isomer of X

Answer: C

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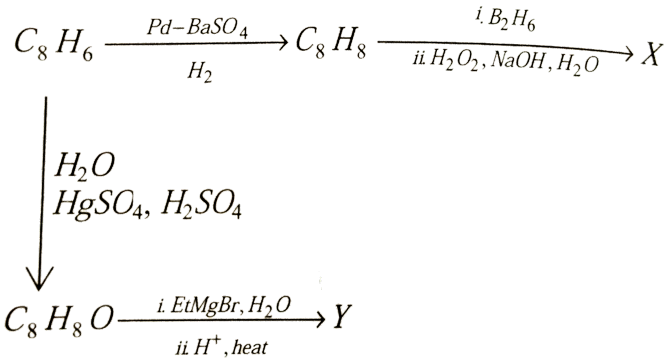
5. In the following reactions

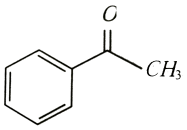
Passage-III

In the following reactions

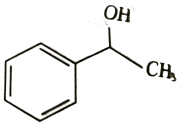


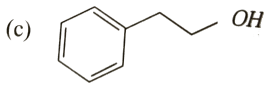
Compound X is

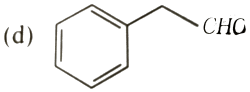
A. (a)



B. (b)



C. 

D. 

Answer: C

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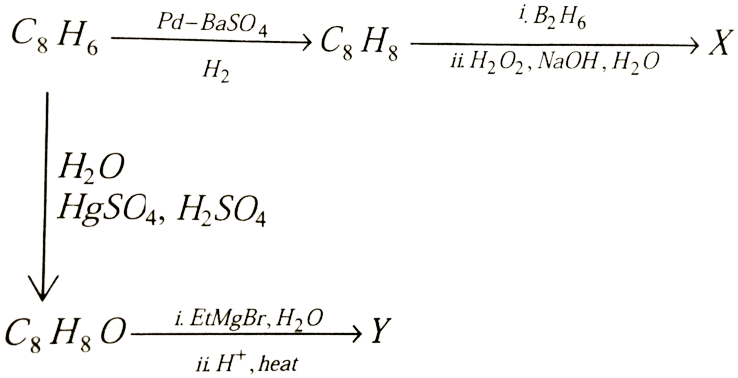
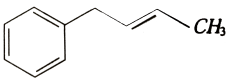
6. In the following reactions

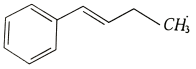
Passage-III

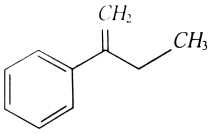
In the following reactions

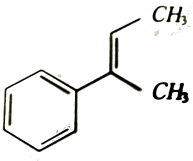


The major compound Y is

A. (a) 

B. (b) 

C. (c) 

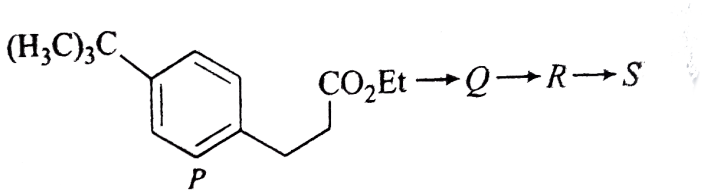
D. (d) 

Answer: D

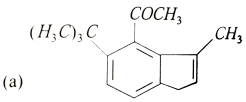
Watch Video Solution

7. The reaction of compounf P with CH_3MgBr (excess) in $(C_2H_5\_(2)O$ followed by addition of H_2O give Q the compound Q on treatment with H_2SO_4at 0° C gives R. the reaaction of R with CH_3COCl in the presence of anhydrous $AlCl_3 \text{in} CH_2Cl_2$ followed by treatment with H_2O produces compound S. [Et in compound P is ethyl group] The product S is The

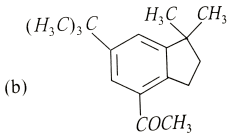
product S is



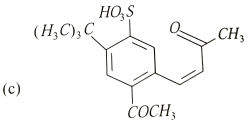
A.



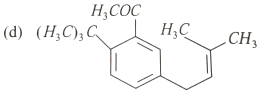
B.



C.



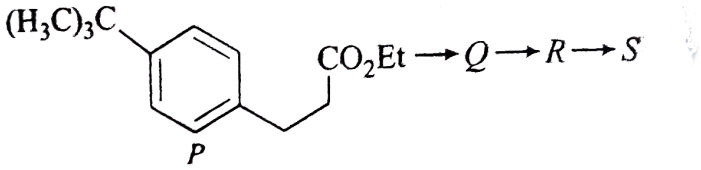
D.



Answer: B

Watch Video Solution

8. The reaction of compounf P with CH_3MgBr (excess) in $(C_2H_5\_(2)O$ followed by addition of H_2O give Q the compound Q on treatment with H_2SO_4at 0° C gives R. the reaaction of R with CH_3COCl in the presence of anhydrous $AlCl_3 \text{in} CH_2Cl_2$ followed by treatment with H_2O produces compound S. [Et in compound P is ethyl group] The product S is The product S is



A. Aromatic sulfonation and Friedel-Crafts acylation

B. Friedel-Crafts alkylation and Friedel-Crafts acylation

C. Friedel-Crafts alkylation , dehydration and Friedel-Crafts acylation

D. Dehydration and Friedel-Crafts acylation

Answer: B

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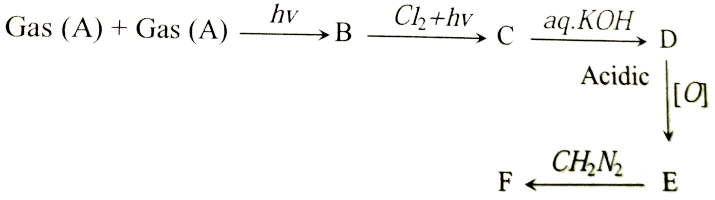
9. Five millitres of a gas (A) containing only C and H was mixed with an excess of oxygen (30 ml) and the mixture was exploded by means of an electric spark. After the explosion, the remaining volume of the mixed gases was 25 ml. On adding a concentrated solution of KOH, the volume further diminished to 15 ml.The residual gas being pure oxygen .



The molecule formula of gas (A) is

A. C_2H_4

B. C_2H_6

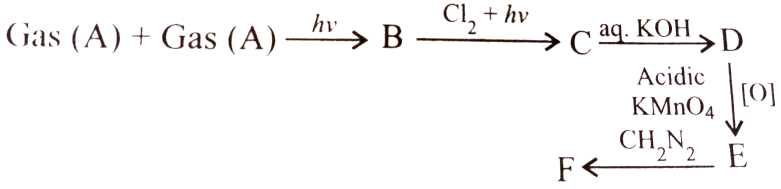
C. C_3H_6

D. C_3H_8

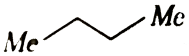
Answer: A

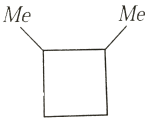
View Text Solution

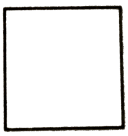
10. Five millilitires of a gas (A) containing only C and H was mixed with an excess of oxygen (30 ml) and the mixture was exploded by means of an electric spaek. After the explosion, the remaining volume of the mixed gasses was 25 ml. On adding a concentrated solution of KOH, the volume further diminished to 15 ml. The residual gas being pure oxyges.

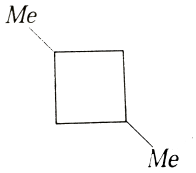


Compound (B) is:

A. (a) 

B. (b) 

C. (c) 

(d) 

D.

Answer: C

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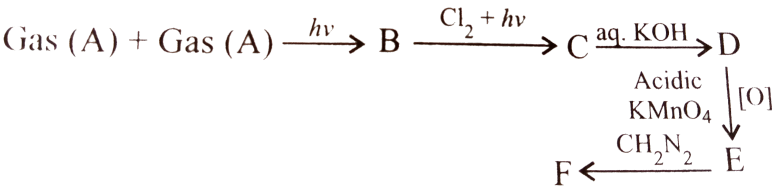
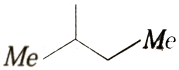
11. Five millilitires of a gas (A) containing only C and H was mixed with an excess of oxygen (30 ml) and the mixture was exploded by means of an electric spaek. After the explosion, the remaining volume of the mixed gasses was 25 ml. On adding a concentrated solution of KOH, the volume further diminished to 15 ml. The residual gas being pure oxyges.



Compound (C) is:

A. (a) 

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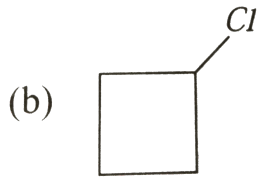
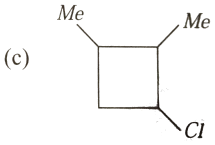
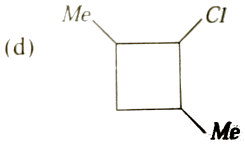


C.



D.



Answer: B

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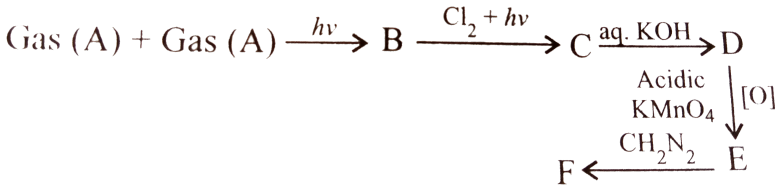
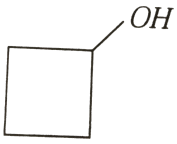
12. Five millilitires of a gas (A) containing only C and H was mixed with an excess of oxygen (30 ml) and the mixture was exploded by means of an electric spaek. After the explosion, the remaining volume of the mixed gasses was 25 ml. On adding a concentrated solution of KOH, the volume further diminished to 15 ml. The residual gas being pure oxyges.



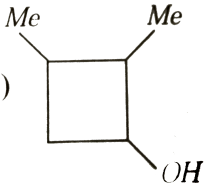
Compound (D) is:

(a)



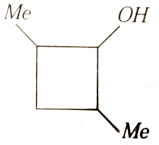
A.

(b)



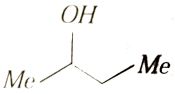
B.

(c)



C.

(d)



D.

Answer: A

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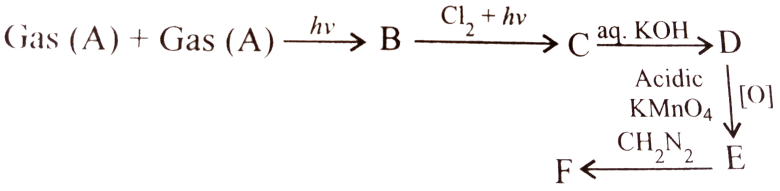
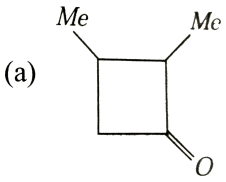
Watch Video Solution

13. Five millilitires of a gas (A) containing only C and H was mixed with an excess of oxygen (30 ml) and the mixture was exploded by means of an electric spaek. After the explosion, the remaining volume of the mixed gasses was 25 ml. On adding a concentrated solution of KOH, the volume further diminished to 15 ml. The residual gas being pure oxyges.

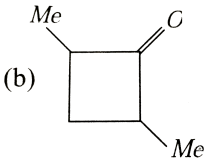


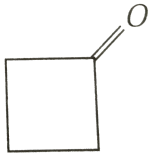
Compound (E) is:

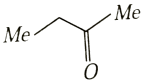
A.



B.



C. (c) 

D. (d) 

Answer: C

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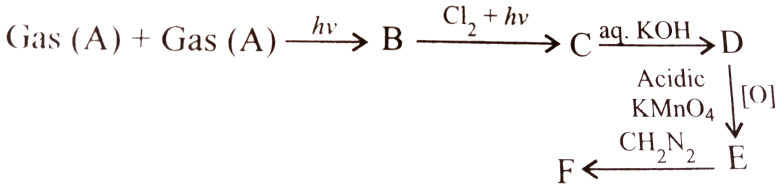
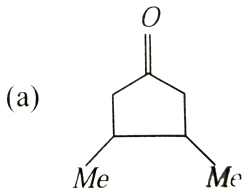
14. Five millilitires of a gas (A) containing only C and H was mixed with an excess of oxygen (30 ml) and the mixture was exploded by means of an electric spaek. After the explosion, the remaining volume of the mixed gasses was 25 ml. On adding a concentrated solution of KOH, the volume further diminished to 15 ml. The residual gas being pure oxyges.

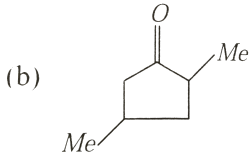


Compopund (F) is:

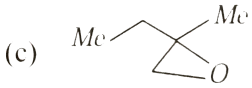
A.



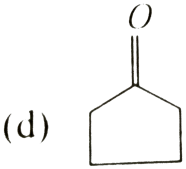
B.



C.



D.



Answer: D

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JEE SECTION (Integer type questions)

1. The total number of alkenes possible by dehydrobromination of 3-bromo-3-cyclopentylhexane using alcoholic KOH is

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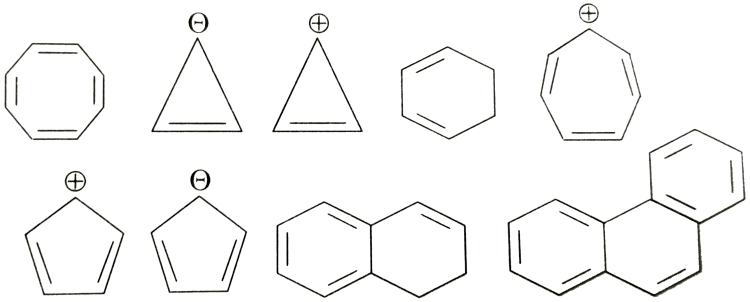
JEE SECTION

1. Among the following the number of aromatic compound (s) is



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2. Amongest the following the maximum number of alkenes which shows geometrical isomers are 1-pentene, 2-butene, 2-pentene, 1-butene ,propne,

2,3-dimethyl-2-butene, 3-hexene, 1-hexene

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3. How many of the following on reductive ozonolysis will give only glyoxal? Ethylene, acetylene, 1,3-butadiene, benzene, o-xylene, m-xylene, p-xylene, cyclobutadiene, cyclooctatetrene.

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4. how many of the following species are aromatic in nature cyclopentadienyl cation, cyclopentadienyl anion, tropylium cation, azulene, cyclopropenyl cation, tetrahydrofuran, cyclooctatetraene, furan , cycloheptatriene

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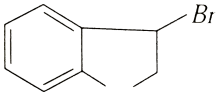
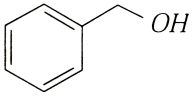
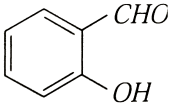
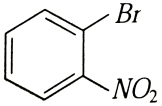
JEE SECTION (Matrix Match type questions)

1. Each of the compouns given in Column I with the reactions that they can undergo , given in column II .

Column I		Column II	
(A)		(p)	Nucleophilic substitution
(B)		(q)	Elimination
(C)		(r)	Nucleophilic addition
(D)		(s)	Esterification with acetic anhydride
		(t)	Dehydrogenation

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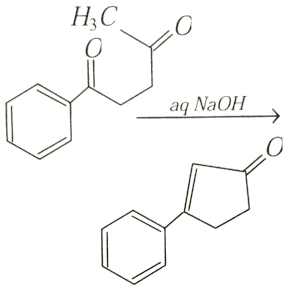
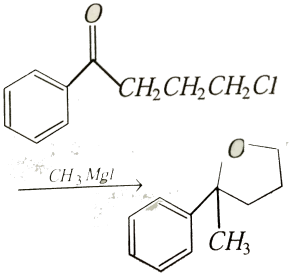
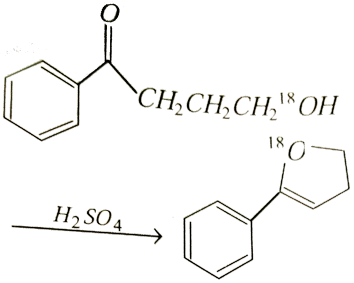
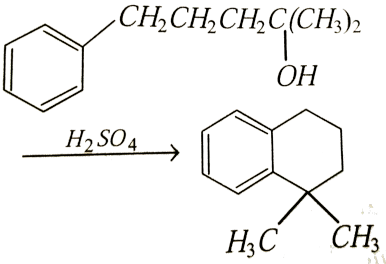
2. Match the reactions in column I with appropriate type of steps/reactive intermediate involved in these reactions as given in Column II.

Column I		Column II	
(A)		(p)	Nucleophilic substitution
(B)		(q)	Electrophilic substitution
(C)		(r)	Dehydration
(D)		(s)	Nucleophilic addition
		(t)	Carbanion

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3.

Column 1		Column 2		Column 3	
(I)	Toluene	(i)	$NaOH/Br_2$	(P)	Condensation
(II)	Acetophenone	(ii)	$Br_2/h\nu$	(Q)	Carboxylation
(III)	Benzaldehyde	(iii)	$(CH_3CO)_2O/CH_3COOK$	(R)	Substitution
(IV)	Phenol	(iv)	$NaOH/CO_2$	(S)	Haloform

The only CORRECT combination in which the reaction proceeds through radical mechanism is

A. (IV)(i)(Q)

B. (III)(ii)(P)

C. (II)(iii)(R)

D. (I)(ii)(R)

Answer: D

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Columns 1, 2 and 3 contain starting materials, reaction conditions, and type of reactions, respectively.

Column 1	Column 2	Column 3
(I) Toluene	(i) $NaOH / Br_2$	(P) Condensation
(II) Acetophenone	(ii) Br_2 / hv	(Q) Carboxylation
(III) Benzaldehyde	(iii) $(CH_3CO)_2O / CH_3COOK$	(R) Substitution
(IV) Phenol	(iv) $NaOH / CO_2$	(S) Haloform

4.

For the synthesis of benzoic acid , the only CORRECT combination is

A. (II)(i)(S)

B. (I)(iv)(Q)

C. (IV)(ii)(P)

D. (III)(iv)(R)

Answer: A

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Columns 1, 2 and 3 contain starting materials, reaction conditions, and type of reactions, respectively.

Column 1	Column 2	Column 3
(I) Toluene	(i) $NaOH / Br_2$	(P) Condensation
(II) Acetophenone	(ii) Br_2 / hv	(Q) Carboxylation
(III) Benzaldehyde	(iii) $(CH_3CO)_2O / CH_3COOK$	(R) Substitution
(IV) Phenol	(iv) $NaOH / CO_2$	(S) Haloform

5.

The only CoRRECT combination that gives two different carboxylic acid

A. (IV)(iii)(Q)

B. (II)(iv)(R)

C. (I)(i)(S)

D. (III)(iii)(P)

Answer: D

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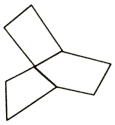
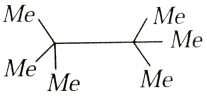
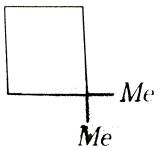
6. Match the compounds in Column I with their structure/characteristic /reaction /stereochemistry etc . Given in coloumn II.

Column I Compound		Column II Structure	
(A)	C_8H_{18} with only 1° H atoms	(p)	
(B)	C_6H_{12} with only 2° H atoms	(q)	
(C)	C_6H_{12} with only 1° and 2° H atoms	(r)	
(D)	C_8H_{14} with 12 secondary and 2 tertiary H atoms	(s)	

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