CHEMISTRY

BOOKS - MARVEL CHEMISTRY (HINGLISH)

ALKANES

Mcqs

1. Hydrocarbons are

A. composed of carbon and hydrogen

B. compsed of carbon, hydrogen and oxygen

C. compsed of carbon and oxygen

D. composed of carbon and nitrogen

Answer: A

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2. Marsh gas mainly contains:

A. $CH_2 = CH_2$

B. CH_4

C. H_2S

D. $CHCI_3$

Answer: B

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3. Petroleum is found

A. on the surface of the earth

B. in the atmosphere

C. in Arctic ocean

D. deep under the surface of the earth

Answer: D

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4. Petroleum is formed by chemical changes in

A. inorganic matter

B. vegetable matter only

C. animal matter only

D. both vegetable and animal matter

Answer: D

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5. Paraffin wax is a/ an _____.

A. Ester

B. Alcohol

C. Unsaturated hydrocarbons

D. Saturated hydrocarbons

Answer: D

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6. A gas believed to be the cause of explosin in coal mine is

A. CH_4

B. C_2H_6

C. C_3H_8

D. C_4H_{10}

Answer: A

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7. Which of the following statements is false about propane?

A. All bound angles are 109.5°

B. Each of carbon is sp^3 hybridised

C. The compound is combustible

D. The compound undergoes polymerisation to give polypropylene

Answer: D

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8. A tertiary carbon is bonded directly to

A. 2 Hydrogens

B. 3 Carbons

C. 2 Carbons

D. 4 Carbons

Answer: B

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9. Which of the following formula represents an alkane?

A. C_5H_8

B. $C_{20}H_{50}$

C. C_3H_6

D. C_4H_{10}

Answer: D

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10. A hydrocarbon with formula C_8H_{18} gives one monochloro derivative. The hydrocarbon can be:

A. n-Octane

B. 2-Methylheptane

C. 2,2,4-trimethylpentane

D. 2,2,3,3-tetramethylbutane

Answer: D

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11. Percentage of hydrogen is maximum in

A. C_2H_2

B. C_2H_4

C. C_2H_6

D. CH_4

Answer: D

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12. Successive alkanes differ by

A. CH_2

B. CH

C. CH_3

D. C_2H_4

Answer: A

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13. For the alkane C_4H_{10}, which of the following is not correct structure of normal isomer?

A. $CH_3 - CH_2 - CH_2 - CH_3$

B. $CH_3 - CH_2 - \underset{\underset{CH_3}{|}}{C}H_2$

C. $\overset{CH_3}{\underset{|}{C}}H_2 - CH - CH_3$

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

Answer: D

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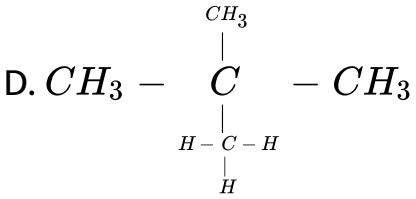
14. Which of the following is not another representation of isopentane?

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

B. 

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

D. 

Answer: D

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15. In the formation of methane molecule carbon makes use of

A. unhybridised orbitals

B. sp-hybridised orbitals

C. sp^2- hybridised orbitals

D. sp^3- hybridised orbitals

Answer: D

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16. Which of the following statement is incorrect ?

The members of the homologous series of alkanes

A. are all straight chain compounds

B. have the general formula C_nH_{2n+2}

C. have similar chemical properties

D. show a regular graduation of physical properties

Answer: A

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17. Which has least carbon bond length-

A. Ethane

B. Ethyne

C. Ethene

D. Benzene

Answer: B

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18. What type of an alkyl group is an isobutyl group?

A. Primary

B. Secondary

C. Tertiary

D. Neo group

Answer: A

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19. How many isomers are possible for butane?

A. 2

B. 3

C. 4

D. 5

Answer: A

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20. How many isomers are possible for 2- methylpropane?

A. 2

B. 3

C. 4

D. 5

Answer: A

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21. How many isomers are possible for pentane?

A. 2

B. 3

C. 4

D. 5

Answer: B

22. How many isomers are possible for heptane(excluding optical isomers)

A. 9

B. 10

C. 11

D. 12

Answer: A

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23. Numbers of chain isomers shown by Nonane are

A. 5

B. 9

C. 18

D. 35

Answer: D

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24. If torsion angle is 60°, then relationship between the group is knows as

A. Eclipsed

B. Anti

C. Gauche

D. Staggered

Answer: C

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25. The energy required to rotate ethane molecule about the carbon-carbon bond is called as _____ energy.

A. Potential

B. Torsional

C. Kinetelic

D. Transitional

Answer: B

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26. Which comformation is most stable in ethane?

A. Staggered

B. Eclipsed

C. Skew

D. Skew and Staggered

Answer: A

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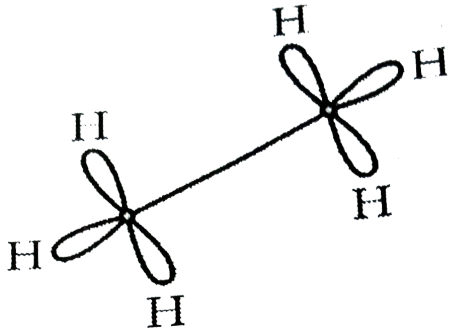
27. In the following structures which two forms are staggered conformation of ethane?

(1)



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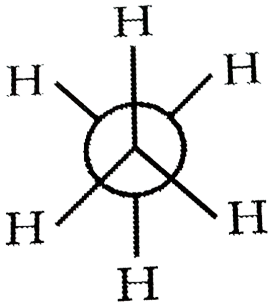

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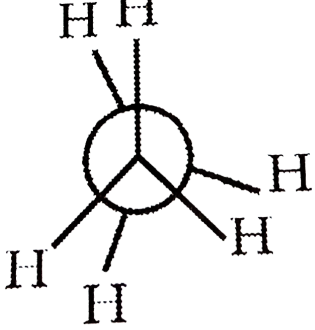

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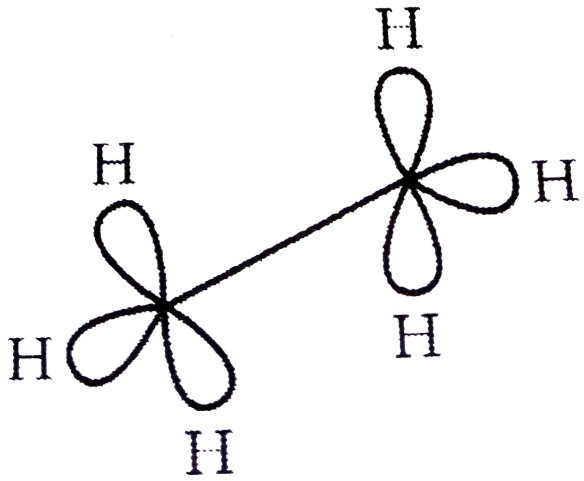

A. 1 and 4

B. 2 and 3

C. 1 and 2

D. 1 and 3

Answer: C

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28. Which of the following is correct name according to the IUPAC rules?

A. 2-Methylcyclohexane

B. 2-Ethyl-2-methylpentane

C. 3,4-Diamethylpentane

D. 3-Ethyl-2methylpentane

Answer: D

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29. Which molecular formula indicates 2-methylpentane?

A. C_5H_{12}

B. C_6H_{14}

C. C_5H_{10}

D. C_6H_{12}

Answer: B

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30. Which molecular formula indicates 2,2,4-trimethylhexane?

A. C_9H_{20}

B. C_9H_{18}

C. C_8H_{18}

D. C_8H_{16}

Answer: A

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31. Methane can be prepared by

A. the reaction of iodomethane with sodium in dry ether

B. ther reaction of methanol with concentrated H_2SO_4

C. the reaction of sodium methanoate with soda-lime

D. the reaction of sodium ethanoate with soda-lime

Answer: D

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32. Which of the following reactions can be used to prepare alkanes?

A. Corey-House synthesis

B. Williamson synthesis

C. Friedel-Crafts reactions

D. Grignard reagent

Answer: A

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33. Which of the following reactions cannot be used to prepare alkanes?

A. Wurtz reaction

B. Wolf-kishner reduction

C. Kolbe's electrolysis

D. Cannizzaro's reaction

Answer: D

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34. 2,3-Dimethyl-2-butene undergoes catalytic hydrogenation to give

A. 2,3-Dimethylbutane

B. 2-Methylpentane

C. 2,2-Dimethylbutane

D. 3-Methylpentane

Answer: A

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35. Formation fo alkane by action of zinc and alkylhalide is called

A. Wurtz reaction

B. Frankland reaction

C. Kolbe's reaction

D. Clemmensen reaction

Answer: B

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36. Wurtz reaction is used to prepare

A. Methane only

B. Symmetrical alkanes

C. Unsymmetrical alkanes

D. All type of alkanes

Answer: B

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37. Saturated hydrocarbons undergo

A. substitution reactions

B. addition reactions

C. polymerization reactions

D. condensation reactions

Answer: A

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38. The reagents and conditions to convert methyl iodide to methane are

A. action of dry Ag_2O

B. KCN followed by refluxing the with dilute HCI

C. aqueous $NaOH$ followed by boiling $A1_2O_3$ at 640 K

D. Mg in dry ether followed by boiling with water

Answer: D

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39. Zinc-copper couple that can be used as a reducing agent is obtained by

A. mixing zinc dust and copper gauze

B. zinc coated with copper

C. copper coated with zinc

D. zinc and copper wires welded together

Answer: B

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40. Decarboxylation of isobutyric acid gives n-alkane but reduction of isobutyric and with phosphorous and hydrogen iodide gives

A. n-Propane

B. Isobutane

C. n-Butane

D. none of these

Answer: B

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41. The function of sodalime (a mixture of solid NaOH and solid CaO) in the decarboxylation reaction is

A. to increase the rate of reaction

B. to decrease the rate of reaction

C. to change the rate of reaction

D. to cease the reaction

Answer: B

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42. Which of the following alkanes can be synthesized by the Wurtz reaction in good yield ?

A. $(CH_3)_2(CH - CH_2 - CH(CH_3)_2$

B. $(CH_3)_2CH - CH_2CH_2 - (CH_2)_2$

C. $CH_2CH_2 - C(CH_3)_2 - CH_2CH_3$

D. $(CH_3)_3C - CH_2 - CH_2 - CH_3$

Answer: B

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43. When propanal is heated with Zn-Hg and conc. HCI, which is formed

A. C_3H_4

B. C_3H_6

C. C_3H_8

D. C_3H_7Cl

Answer: C

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44. To obtain alkane by decarboxylation the reacting substance are

A. sodium salf of organic acid and soda lime

B. sodium salf of organic acid and potash lime

C. organic acid and sodium hydroxide

D. organic acid and calcium oxide

Answer: A

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

A. Methane

B. Ethane

C. Propane

D. n-Butane

Answer: A

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46. Which hydrocarbon is formed by the action of sodium on ethyl iodide?

A. Methane

B. Ethane

C. Ethylene

D. n-Butane

Answer: D

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47. Which hydrocarbon is formed when aluminium carbide is reacted with water and dilute HCI?

A. Methane

B. Ethane

C. Acetylene

D. Ethylene

Answer: A

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48. A aqueous solution of substance on electrolysis gives ethane. The substance is

A. Acetic acid

B. Acetamide

C. Potassium acetate

D. Ethyl acetate

Answer: C

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49. Which of the following has the smallest heat of hydrogenation per mole ?

A. 1-butene

B. trans-2-butene

C. cis-2-butene

D. 1,3-butadiene

Answer: B

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

A. pyrolysis of higher carbon number hydrocarbon

B. electrolysis of salts of fatty acids

C. Sabatier and Senderens reaction

D. direct synthesis

Answer: B

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51. Which statement is false?

A. Many alkanes are soluble in water

B. All alkanes have a lower density than water

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

D. All alkanes burn

Answer: A

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52. As the molecular weight of alkanes increases, how do the boiling point and melting point change?

A. Boiling point increases, melting point increases

B. Boiling point decreases, melting point decreases

C. Boiling point increases, melting point decreases

D. Boiling point increases, melting point increases sequentially for alkanes over four carbons

Answer: D

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53. The branching of alkanes that produces summetrical structures

A. raises the boiling point, raises the melting point

B. raises the boiling point, lowers the melting point

C. lowers the boiling point, lowers the melting point

D. lowers the boiling point, raises the melting point

Answer: A

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54. How does the melting point of propane and ethane compare?

A. The melting point of propane is greater

B. The melting point of ethane is greater

C. The melting points are within $5^{\circ} C$ of one another

D. No relationship exists among these alkanes and their melting points

Answer: B

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55. How do the boiling points of butane, propane and ethane compare?

A. The boiling point of ethane is greatest

B. The boiling point of butane is greatest

C. The boiling point of propane is greatest

D. There is no relationship among these three alkanes and their boiling points

Answer: B

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56. Which of the following alkanes will have the highest boiling point?

A. n-Octane

B. Isopentane

C. n-Butane

D. Neopentane

Answer: A

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57. Which of the following alkanes will have the lowest boiling point?

A. n-Heptane

B. Isopentane

C. n-Hexane

D. Neopentane

Answer: D

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58. Paraffin dissolves in

A. Distilled water

B. Methanol

C. Benzene

D. Salt water

Answer: C

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59. Among paraffins, it is generally found that with an increase in molecular weight

A. freezing point decreases

B. boiling point increases

C. boiling point decreases

D. specific gravity decreases

Answer: C

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60. The compound with the highest boiling point is:

A. n-hexane

B. n-pentane

C. 2,2-dimethyl propane

D. 2-methyl butane

Answer: A

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61. Cyclohexane floats on water because

A. it is immiscible water

B. its density is less than that of water

C. it is non polar substance

D. it is immiscible and lighter than water

Answer: D

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62. As compared to boiling points of straight chain isomers, the boiling points of branched chain alkanes are

A. lower

B. higher

C. same

D. does not depend upon branching

Answer: A

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63. Which of the following classes of compound is unreactive toward sulphuric acid?

A. Alkanes

B. Alcohols

C. Alkense

D. Alkynes

Answer: A

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

A. n-Hexane

B. Diethyl ether

C. 1-Butane

D. Aniline

Answer: A

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65. Why is the halogenation of alkanes considered a chain reaction?

A. It occurs quickly

B. It occurs without the generation of intermediates

C. Each step generates the reaction intemediate that cause the next step to occur

D. The reaction allows long chains of halogenated alkanes to be formed

Answer: C

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66. The chlorination of methane to give CCl_4 is an example of -

A. an electrophilic addition

B. a free-radical substitution

C. a nucleophilic addition

D. an electrophilic substitution

Answer: B

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67. In the chlorination of alkanes, the first step in which chlorine free radicals are produced is called

A. Initiation

B. Activation

C. Propagation

D. Deactivation

Answer: A

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68. Chlorine free radicals react with methane by

A. donating their free-radicals electron to methane to from chloromethane

B. abstracting a hydrogen atom form methane, and producing HCI and methyl radical

C. forming a carbanion intermediate that rapidly dissociates to produce chloromethane

D. forming a carbonium ion intermediate that reapidly dissociate to from chloromethane

Answer: B

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69. Which halogen does not appreciably react with methane in a free-radical substitution reaction?

A. Chlorine

B. Bromine

C. Iodine

D. Fluorine

Answer: C

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70. Which major product is formed in the free-radical bormination of methane by limited supply of bromine?

A. Bromomethane

B. Dibromomethane

C. Tribromemethane

D. Tetra bromomethane

Answer: A

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71. Chlorination of an alkanes as compared to bormination proceeds

A. at a slower rate

B. at a faster rate

C. with equal rates

D. with equal or different rate depending upon the source of alkane

Answer: B

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72. How many monochlorinated isomers would result form the reaction of chlorine with n-butane in the presence of UV light?

A. 2

B. 4

C. 6

D. 8

Answer: A

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73. How many primary products of monochlorination are possible in the reaction of 2,2-dimethylbutane with chlorine in the presence of ultraviolet light?

A. 2

B. 3

C. 4

D. 5

Answer: A

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74. A compound of formula C_3H_8 does not react with bormine in CCI_4 in the dark. The compound could be

A. Alkane

B. Cycloalkane

C. Alkene

D. Cycloalkene

Answer: A

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75. The cobustion of Pentane produces

A. Pentene

B. $HCl + H_2O$

C. Pentyne

D. $CO_2 + H_2O$

Answer: D

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76. The combustion of one mole of propane, C_3H_8,produces how many moles of H_2O?

A. 2

B. 3

C. 4

D. 5

Answer: C

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77. The major carbon compound formed from the incomplete combusion of a hydrocarbon in air is

A. Carbon dioxide

B. Carbon monoxide

C. Water

D. Alkyl chains

Answer: B

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78. The thermal decomposition of alkanes in the absence of air is known as:

A. Combustion

B. Oxidation

C. Cracking

D. Hydrogenation

Answer: C

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79. The reaction condtions leading to best yields of C_2H_5CI are

A. $C_6H_6(excess) + CI_2 \xrightarrow{UV \quad light}$

B. $C_6H_6 + CI_2 \xrightarrow[\text{Room temp.}]{\text{Dark}}$

C. $C_2H_6 + CI_2(\text{excess}) \xrightarrow{\text{UV light}}$

D. $C_2H_6 + CI_2 \xrightarrow{\text{UV light}}$

Answer: A

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80. The thermal decomposition of alkanes is known as

A. Cracking

B. Isomerization

C. Dehydration

D. Reforming

Answer: A

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81. A gaeous hydrocation $'X'$ on reaction with bromine in light forms a mixture of two monbromo alkanes and HBr. The hydrocarbon $'X'$ is :

A. C_6H_6

B. C_3H_6

C. C_3H_8

D. C_4H_{10}

Answer: C

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82. Which of the following isomer of the pentane gives four monochloropantane on chlorination?

A. Pyrolysis

B. Substitution

C. Homolysis

D. Peroxidation

Answer: C

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83. Which of the following isomer of the pentane gives four monochloropantane on chlorination?

A. n-Pentane

B. Isopentane

C. Neopentane

D. 2,2-Dimethylpropane

Answer: B

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84. Reactivity of hydrogen atoms attached to different carbon atoms in alkane has the order:

A. Tertiary $>$ Primary $>$ Secondary

B. Secondary $>$ Primary $>$ Tertiary

C. Tertiary $>$ Secondary $>$ Primary

D. Primary $>$ Secondary $>$ Tertiary

Answer: C

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85. Reaction of alkanes with halogen is explosive in case of

A. CI_2

B. F_2

C. Br_2

D. I_2

Answer: B

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

A. Cracking

B. Hydrolysis

C. Oxidation

D. Distillation

Answer: A

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87. In the chlorination of 2-methyl butane, how many isomeric monochlorides are obtained

A. One

B. Two

C. Three

D. Four

Answer: D

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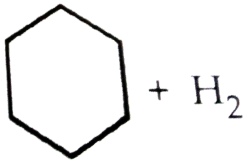
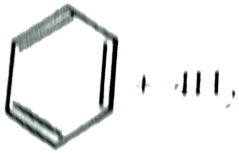
88. Complete the following reaction :

$$C_6H_{14} + CH_4 \xrightarrow[10 \text{ to } 20 \text{ atm.}]{Cr_2O_3 + 773K} ?$$

A. 

B. 

C. $C_5H_{10} + CH_4$

D. $C_4H_8 + C_2H_6$

Answer: B

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89. The following reaction is an example of

$C_3H_8 + CI_2 \rightarrow C_3H_6CI_2 + 2HCI$

A. an addition reaction

B. a substitution reaction

C. an oxidation reaction

D. halogenation reaction

Answer: D

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90. Ethylene from ethyl bormide is obtained by treating it with

A. Hydrogen

B. Alcoholic caustic potash

C. Aqueous caustic potash

D. Aqueous caustic soda

Answer: B

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91. Finl product on the oxidation of hydrocarbon is

A. Acid

B. Aldehyde

C. Dihydric alcohol

D. $H_2O + CO_2$

Answer: D

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92. When ethylbromide and propyl bromide are allowed to reacts with sodium in ether, they form

A. single alkane

B. mixture of two alkanes

C. mixture of three alkanes

D. mixture of four alkanes

Answer: C

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93. Indoethane reacts with sodium in the presence of dry ether. The main product is

A. Pentene

B. Propyne

C. Butane

D. Butene

Answer: C

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94. In Wurtz reaction the reagent used is

A. Na

B. Na/lig.NH_3

C. Na/dry ether

D. Na/dry alcohol

Answer: C

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95. In paraffins the order of ease of substitution is

A. Tertiary hydrogen $>$ Secondary $>$ Primary

B. Tertiary hydrogen $>$ Primary $>$ Secondary

C. Secondary hydrogen $>$ Tertairy $>$ Primary

D. None

Answer: A

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96. The addition of oxygen gas to reaction mixture of chlorine and methane (photochemical chlorination)

A. accelerates the reaction

B. retards the reaction for some time

C. has an effect on the rate of reaction

D. may accelerate or retard the reaction depending upon the amount of oxygen

Answer: B

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97. Which is correct statement?

A. Alkanes undergo ozonolysis

B. Alkanes undergo addition reaction

C. Alkene add on hydrogen to give alkanes

D. alkanes add on sulphate to give sulphuric acid

Answer: C

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98. LPG (Household cooking gas) is mainly a mixture of

A. Methane+Ethane

B. Acetylene+O_2

C. Butane+Isobutane

D. Acetylene+H_2

Answer: C

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99. Octane number is related to

A. Gasoline

B. Kerosene oil

C. Diesel oil

D. Lubricating oil

Answer: A

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100. In any fuel, the percentage by volume of iso-octane in a mixture of iso-octane and n-heptane which will knock under same conditions as the fuel being tested, is called

A. Cracking

B. Iodine number

C. Aromatisation

D. Octane number

Answer: D

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101. Iso-octane is added to petrol

A. to precipitate inorganic material

B. to prevent freezing of petrol

C. to increase the boiling point

D. as an antiknocking agent

Answer: D

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102. Petroleum consists mainly of

A. Aliphatic hydrocarbons

B. Aliphatic alcohols

C. Aromatic derivatives

D. none of these

Answer: A

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103. Domestic cooking gas consists of mostly

A. Methane and ethane

B. Liquidfied butane and iso-butane

C. Ethylene and carbon monoxide

D. Hydrogen and acetylene

Answer: B

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104. LPG contains

A. Methane

B. Ethane

C. Butane

D. None of the above

Answer: C

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105. Gasoline has compounds having

A. $C_3 - C_5$

B. $C_5 - C_8$

C. $C_8 - C_{10}$

D. $C_{10} - C_{20}$

Answer: B

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106. Which of the following statements is not true of natural gas?

A. It is a mixture of CO_2 and H_2

B. It is a mixture of gaseous hydrocarbons

C. It is a fuel

D. It is used in the manufactures of fertilizer

Answer: D

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107. The number of carbons atoms in hydrocarbon of kerosene oil is in the range of

A. $C_5 - C_7$

B. $C_{10} - C_{16}$

C. $C_1 - C_4$

D. $C_{17} - C_{20}$

Answer: B

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108. How many isomers are possible for hexane?

A. 4

B. 5

C. 6

D. 7

Answer: B

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109. The compound which has one isopropyl group is :

A. 2,2,3,3-tetramethylpentane

B. 2,2-dimethlpentane

C. 2,2,3-trimethylpentane

D. 2-methylpentane

Answer: D

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

A. CH_3I

B. C_2H_5I

C. CH_3OH

D. C_2H_2OH

Answer: A

Watch Video Solution

111. The compound with the highest boiling point is:

A. n-Pentane

B. 2-Methylbutane

C. n-Hexane

D. 2,2-Dimethylpropane

Answer: C

Watch Video Solution

112. The highest boiling point is expected for:

A. Iso-octane

B. n-Octane

C. 2,2,3,3-tetramethylbutane

D. n-Butane

Answer: B

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113. When Grignard reagent (CH_3MgBr) is treated with water, we get

A. Ethane

B. Ethyl alcohol

C. Methyl alcohol

D. Methane

Answer: D

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114. Ethane can be prepared by

A. heating soldalime with sodium acetate

B. electrolysis of sodium succinate

C. electrolysis of acetate

D. heating sodalime with sodium propionate

Answer: C

View Text Solution

115. Carbon black is obtained when methane is

A. heated in absence of air

B. heated in presence of nitrogen

C. heated in presence of ammonia

D. heated with steam

Answer: A

Watch Video Solution

116. What is volume of oxygen required for the complete combustion of 4 litres of ethane?

A. 4 litre

B. 8 litre

C. 12 litre

D. 14 litre

Answer: D

Watch Video Solution

117. Kerosene is a mixture of

A. Aromatic hydrocarbons

B. Aliphatic hydrocarbons

C. Saturated hydrocarbons

D. Alicyclic hydrocarbons

Answer: B

Watch Video Solution

118. Which of the following substance is used as antiknock compound?

A. TEL

B. Lead tetrachloride

C. Lead acetate

D. C_2H_5PbCI

Answer: A

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119. Most of hydrocarbons from petroleum are obtained by

A. Fractional distilation

B. Fractional crystallization

C. Vaporization

D. Isomerization

Answer: A

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120. Pertroleum mixture do not contain

A. Alkanes

B. Cycloalkanes

C. Aromatic hydrocarbons

D. Metallic compounds

Answer: D

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121. The number of chain isomers of alkane containing six carbon atoms is

A. 3

B. 4

C. 5

D. 6

Answer: C

Watch Video Solution

122. The compressed gas available in cooking gas cylinders is a mixture of

A. $C_6H_6 + C_6H_5CH_3$

B. $C_2H_4 + C_2H_2$

C. $C_2H_4 + CH_4$

D. $C_4H_{10} + C_3H_8$

Answer: D

Watch Video Solution

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

A. Propane

B. Ethane

C. Butane

D. A mixture of the above three

Answer: D

Watch Video Solution

124. It is necessary to use_____ in the iodination of alkane.

A. Alcohol

B. Oxidising agent

C. Benzene

D. Reducing agent

Answer: B

Watch Video Solution

125. 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. Electolysis

Answer: D

Watch Video Solution

126. The number of different substitution products possible when bromine and ethane are allowed to react, is

A. 6

B. 8

C. 7

D. 9

Answer: D

Watch Video Solution

127. Which of the following is not linked with methane?

A. Marsh gas

B. Natural gas

C. Producer gas

D. Coal gas

Answer: C

Watch Video Solution

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

A. Wurtz's reaction

B. Kolbe's synthesis

C. Sabatier and Senderen's reaction

D. Carbylamine reaction

Answer: C

Watch Video Solution

129. Decarboxylation of isobutyric acid yields

A. Isobutane

B. 2-Methylpropane

C. n-Butane

D. Propane

Answer: D

Watch Video Solution

130. In the complete combustion of hydrocarbon (C_nH_{2n+2}) the number of oxygen molecules required per mole of hydrocarbon is

A. $\frac{n}{2O_2}$

B. $\left(\frac{n+1}{2}\right)O_2$

C. $\left(\frac{3n+1}{2}\right)O_2$

D. $\left(\frac{n+2}{2}\right)O_2$

Answer: C

Watch Video Solution

131. What is the maximum number of carbon atoms in the expected products of the Wurtz reaction,

$$CH_3 - \underset{\text{Na+dry ether}}{CH_2Br} \text{ and } \underset{\text{Products}}{\downarrow} \qquad CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_2Br$$

A. 8

B. 6

C. 4

D. 2

Answer: A

Watch Video Solution

132. Grignard reagent give alkane with:

A. H_2O

B. C_5H_5OH

C. $C_2H_5NH_2$

D. `All of these

Answer: D

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133. The most important method of prepare lower hydrocarbon is

A. Cracking

B. Sabatier-Senderen's reaction

C. Heating salts of fatty acids with sadalime

D. direct synthesis

Answer: C

View Text Solution

134. Which of the following reactions is expected to radily give a hydrocarbon product in good yield?

A. $(CH_3)_3C - CI \xrightarrow{C2H_5OH}$

B. $RCOOK \xrightarrow{\text{Electrolysis}}$

C. $CH_3 - CH_2 \xrightarrow[\text{hv}]{CI_2}$

D. $RCOOAg \xrightarrow{Br2}$

Answer: B

View Text Solution

135. Which alkane is secreted by cockraockes?

A. C_6H_{14}

B. $C_{11}H_{24}$

C. $C_{12}H_{26}$

D. $C_{10}H_{22}$

Answer: B

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136. Which of the following is not related with the conformation of alkane?

A. Sawhorse conformation

B. Newman conformation

C. Skew conformation

D. Torsional conformation

Answer: D

Watch Video Solution

137. In the chlorination of methane, a by-product may formed is

A. CI_2

B. CH_3CI

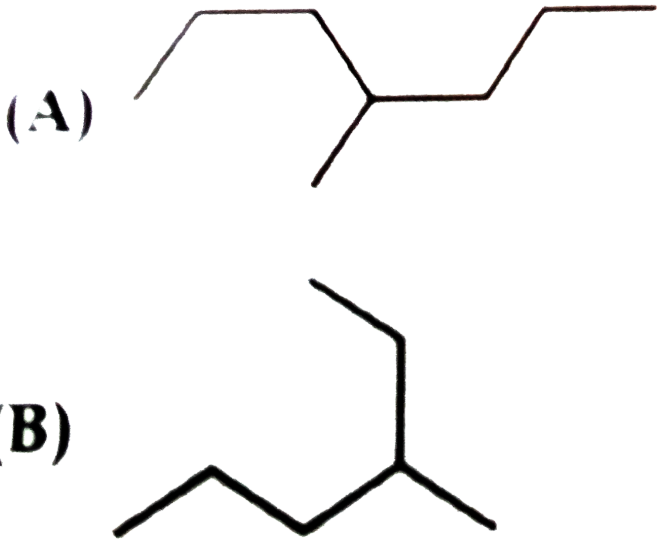
C. . CI

D. $CH_3 - CH_3$

Answer: C

View Text Solution

138. Which of the following two structures are identical?



(A)

(C) $CH_3C(CH_3)_2\underset{CH_3}{\underset{|}{C}}H-CH_3$

(D) $CH_3CH_2CH(CH_3)CH_2CH_2CH_3$

A. A and B

B. B and D

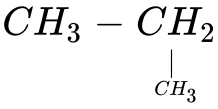
C. D and C

D. C and D

Answer: B

Watch Video Solution

139. The IUPAC name of the following structure is



A. iso-propane

B. propane

C. prop-1-ane

D. 1-propane

Answer: B

Watch Video Solution

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

A. C_6H_6

B. CH_3I

C. CH_3OH

D. C_2H_5OH

Answer: B

Watch Video Solution

141. What volume of methane is formed from 8.2 g of sodium acetate by a fusion with sodalime?

A. 10 litres

B. 11.2 litres

C. 5.6 litres

D. 2.24 litres

Answer: D

Watch Video Solution

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

A. Frankland reaction

B. Wurtz reaction

C. Cannizzaro's reaction

D. Kolbe's reaction

Answer: A

Watch Video Solution

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

A. CO_2

B. $RCHO$

C. RCOOH

D. RCH_2OH

Answer: A

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144. The function of sodalime (a mixture of solid NaOH and solid CaO) in the decarboxylation reaction is

A. to decrease the rate of reaction

B. to increase the rate of reaction

C. to keep the reaction homogeneous

D. to get pure alkane

Answer: A

Watch Video Solution

145. Which of the following substance will not react with PCI_5?

A. Methyl alcohol

B. Acetic acid

C. Acetaldehyde

D. Ethane

Answer: D

Watch Video Solution

146. Which liberate methane gas on treatment with water?

A. Silicon carbide

B. Calcium carbide

C. Aluminum carbide

D. Iron carbide

Answer: C

Watch Video Solution

147. Only two isometric monochloro derivatives are possible for

A. n-Butane

B. 2,3-dimethyl pentane

C. methane

D. neo pentane

Answer: A

Watch Video Solution

148. A hydrocarbon with formula C_8H_{18} gives one monochloro derivative. The hydrocarbon can be:

A. octane

B. 2,2,4-trimetyl pentane

C. 2-methyl heptane

D. 2,2,3,3-tetramethyl butane

Answer: D

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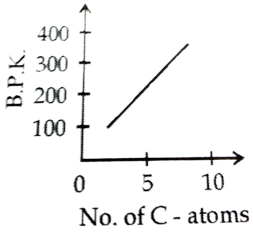
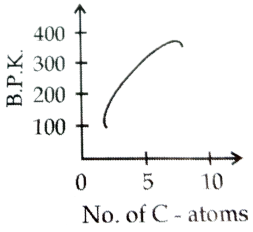
149. When the boiling points of the first ten normal alkanes are plotted the graph looks like:

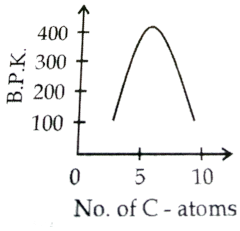
A.



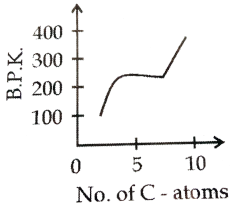
B.



C.



D.



Answer: A

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150. Isobutyl magneisum bromide with dry ether and absolute alcohol gives

A.

$$CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_2OH \text{ and } CH_3 - CH_3 - CH_2MgBr$$

B.

$$CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_2 - CH_2 - CH_3 \text{ and } Mg(OH)Br$$

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

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

Answer: C

Watch Video Solution

151. Which of the following methods is most appropriate for the manufacture of methane?

A. Wurtz reaction

B. By reduction of CH_2CI_2

C. Liquifaction of natural gas

D. Reduction of methyl iodide

Answer: C

Watch Video Solution

152. 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. $CH_3 - \underset{D}{CH} - \underset{CH_3}{CH} - CH_2Br$

B. $CH_3 - \underset{D}{CH} - \underset{CH_3}{CBr} - CH_3$

C. $CH_3 - \underset{D}{C(Br)} - \underset{CH_3}{CH} - CH_3$

D. $CH_3 - CH(Br) - \underset{\underset{CH_3}{|}}{C}H - CH_3$

Answer: B

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153. Iodination of alkane is best carried out in the presence of

A. H_2O

B. HIO_3

C. C_6H_6

D. NH_4SH

Answer: B

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154. 20 mL of methane is completely burnt using 50 mL of oxygen. The volume of the gas left after cooling to room temperature is

A. 80 ml

B. 60 ml

C. 30 ml

D. 20 ml

Answer: C

Watch Video Solution

155. Which liberate methane gas on treatment with water?

A. Silicon carbide

B. Calcium carbide

C. Aluminum carbide

D. Iron carbide

Answer: C

Watch Video Solution

156. The central carbon atom in dichlorocarbene contains_____valence electrons.

A. 6

B. 8

C. 4

D. 2

Answer: A

Watch Video Solution

157. Quality of a diesel depends upon

A. Cetane number

B. Octane number

C. Gold number

D. Avogadro number

Answer: A

Watch Video Solution

158. In the complete combustion of hydrocarbon (C_nH_{2n+2}) the number of oxygen molecules required per mole of hydrocarbon is

A. $\frac{n}{2}O_2$

B. $\left(\frac{n+1}{2}\right)O_2$

C. $\left(\frac{3n+1}{2}\right)O_2$

D. $\left(\frac{n+2}{2}\right)O_2$

Answer: C

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159. Which of the following statement is correct about alkanes?

A. Alkanes react with acids or base in normal conditions

B. Alkanes react with oxidising or reducing temperature in normal conditons

C. Alkanes are inert compounds

D. Alkanes are unsasturated compunds

Answer: C

View Text Solution

160. How many primary and secondary carbon atoms are present in neopentane respectively?

A. 4,1

B. 4,0

C. 0,4

D. 4,4

Answer: B

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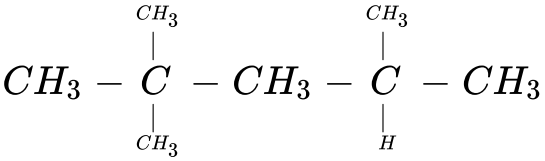
161. The common name of the following alkane is



A. 2,2,4 trimethyl pentane

B. Octane

C. Iso octane

D. 4,4,2 trimethyl pentane

Answer: C

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162. Which of the following metal is used to prepare alkane form alkyl halide in Frankland's reaction?

A. Mg

B. Na

C. Ca

D. Zn

Answer: D

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163. Action of HCI on $(CH_3)_2C = CH_2$ and on $CH \equiv CH$ will predominantly give the compounds repectively

A. $(CH_3)CHCH_2Cl$ and $CH_2Cl - CH_2Cl$

B. $(CH_3)_2C(Cl)CH_3$ and CH_3CHCl_2

C. $(CH_3)_2CHCH_2Cl$ and CH_3CHCl_2

D. $(CH_3)_2CH(Cl)CH_3$ and $CH_3Cl - CH_3Cl$

Answer: B

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164. Gasoline is obatined from crude petroleum oil by its

A. Fractional distilation

B. Vacuum distilation

C. Steam distillation Pyrolysis

D.

Answer: A

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165. The addition of tetraethyl lead to petrol

A. lowers its octane number

B. raises its octane

C. may raise or lower the octane number

D. has no effect on octane number

Answer: B

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166. Anhydrous sodium acetate on heating with sodalime gives

A. Acetic acid

B. Methane

C. Calcium acetate

D. Ethane

Answer: B

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167. The thermal decomposition of alkanes in the absence of air is known as -

A. Cracking

B. Oxidation

C. Combustion

D. Hydrogenation

Answer: A

Watch Video Solution

168. Which of the following does not given alkane?

A. Reaction of CH_3I with Na in ether

B. Reaction of sodium acetate with soda lime

C. Electrolysis of concentrated sodium acetate solution

D. Reaction of ethyl chloride with alcoholic KOH

Answer: D

View Text Solution

169. 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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170. In which case butane is formed?

A. $2C_2H_5 - CI + Na$

B. $C_2H_5COOH + Na_2CO_3$

C. $CH_2 = CH - CH_3 + H_2SO_4$

D. $CH_2 = CH_2 + HBr$

Answer: A

View Text Solution

171. The final product of complete oxidation of alkane is

A. Acid

B. Aldehyde

C. Alcohol

D. Water and carbon dioxide

Answer: D

View Text Solution

172. If the weight of 5.6 litres of a gas at $N.T.P.$ is 11 gram. The gas may be :

A. C_6H_{14}

B. C_4H_{10}

C. C_3H_6

D. C_2H_6

Answer: C

Watch Video Solution

173. which of the following does not react with chlorine in dark?

A. CH_4

B. C_2H_4

C. C_2H_2

D. CH_3CHO

Answer: A

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174. 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

Watch Video Solution

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

A. 4

B. 3

C. 2

D. 1

Answer: B

Watch Video Solution

176. Methane can be prepared by:

A. Wurtz reaction

B. Decarboxylation

C. Hydrogenation reaction

D. Hydrochalogenation reaction

Answer: B

Watch Video Solution

177. $C_5H_5Br \xrightarrow{[H]} M$. M is

A. Ethane

B. Ethene

C. Ethyne

D. Ethyl hydride

Answer: A

View Text Solution

178. n-butane is converted into iso-butane by

A. $LiAIH_4$

B. $NaBH_4$

C. Unhydrous $AICI_3$

D. Zn/HCI

Answer: C

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179. 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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180. Solid state of methane is

A. Molecular solid

B. Ionic solid

C. Covalent solid

D. Not possible to form

Answer: A

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181. 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

Watch Video Solution

182. Out of the five isomeric hexanes, the isomer that can give two monochlorinated compounds is:

A. n-hexane

B. 2,3-dimethyl butane

C. 2,2-dimethyl butane

D. 2-methyl pentane

Answer: B

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183. Isomerism in saturated hydrocarbon is due to

A. change in the value of carbon

B. change in the ratio of elements in compounds

C. formation of branches in the chain of 'C' atoms

D. formation of double bond

Answer: C

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184. In the given reactions:

(i) $CH_3Br \xrightarrow{\text{Na,ether}} X \xrightarrow[\text{hv}]{Br_2} Y \xrightarrow{\text{Na,ether}} Z$

(ii) $CH_3COOH \xrightarrow{\text{NaOH}} X \xrightarrow[\text{CaO}]{NaOH} Y \xrightarrow[\text{hv}]{Br_2} Z$

identify X,Y and Z.

	X	Y	Z
A.	$(i)CH_4$	CH_3Br	CH_3CH_3
	$(ii)CH_3COONa$	CH_3CH_3	CH_3CH_2Br
	X	Y	Z
B.	$(i)CH_3CH_3$	CH_4	CH_3Br
	$(ii)CH_3COONa$	CH_4	$CH_3CH_2CH_3$
	X	Y	Z
C.	$(i)CH_3CH_2Br$	CH_3CH_3	$CH_3CH_2CH_3$
	$(ii)CH_3COONa$	CH_4	CH_3Br

D.

X	Y	Z
$(i)CH_3CH_3$	CH_3CH_2Br	$CH_3CH_2CH_2CH_3$
$(ii)CH_3COONa$	CH_4	CH_3Br

Answer: D

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185. Among the following select the alkane that is expected to have lowest boiling point

A. Hexane

B. 2-Methylpentane

C. 3-Methylpentane

D. 2,2-Dimethylbutane

Answer: D

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Test Your Grasp

1. Action of heat on a mixture of sodium propionate and sodalime produces

A. Methane

B. Ethane

C. Propane

D. Ethylene

Answer: B

Watch Video Solution

2. Knocking sound is produced in the engine when the fuel contains

A. Water

B. Lubricating oil

C. Straight-chained hydrocarbons

D. Isocarbon atoms

Answer: C

Watch Video Solution

3. Select the correct statement about alkanes.

A. They are polar in nature

B. They are soluble in nature

C. They are non-combustible

D. Their dipole moment in zero

Answer: D

Watch Video Solution

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

A. Methane

B. Ethane

C. Propane

D. Butane

Answer: A

Watch Video Solution

5. The gas supplied in cyclinders for cooking is

A. Marsh gas

B. LPG

C. Mixture of CH_4 and C_2H_6

D. Mixture of ethane and propane

Answer: B

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6. Correct IUPAC name of alkane obtained in the reaciton of 2-chloropropane + sodium and dry ether

A. 2,3-Dimethylbutane

B. 2-Isopropylpropane

C. n-Hexane

D. None of these

Answer: A

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7. Number of di-substituted isomers of the product of the reaction, $CH_3CH_2CH_3 + Br_2$, would be

A. 2

B. 5

C. 3

D. 4

Answer: D

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8. Which of the following is the correct sequence of steps in the halogenation of an alkane?

A. Propagation, Initiation, Termination

B. Initiation,Termination,Propagation

C. Intitiation, Propagation,Termination

D. Propagation,Termination,Initiation

Answer: C

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9. Natural gas is primarly composed of

A. Methane

B. n-Butane

C. n-Octane

D. A mixture of octanes

Answer: A

Watch Video Solution

10. Incomplete combustion of alkane gives

A. alkene

B. alkyne

C. aromatic compound

D. carbon black

Answer: D

Watch Video Solution

11. When potassium acetate is electrolysed, we get

A. Methane

B. Ethane

C. Acetylene

D. Ethylene

Answer: B

Watch Video Solution

12. Petrol is mixture of

A. Alkenes

B. Alkanes

C. Alkynes

D. Aromatic hydrocarbon

Answer: B

Watch Video Solution

13. Branching of hydrocaron chains results in

A. increases in oxidation number

B. decreases in octane number

C. decreases in isomer number

D. increases in octane number

Answer: D

Watch Video Solution

14. Ethene gas is bubbled through the water saturated with chlorine. The major product formed will be

A. Ethanoyl chloride

B. Ethylene chlorohydrin

C. Ethylene chloride

D. Ethylene glycol

Answer: B

Watch Video Solution

15. Which of the following reactions would give a good yield of hydrocarbon product ?

A. $RCOOK \xrightarrow[\text{reduction}]{\text{electrolytic}}$

B. $RCOOAg \xrightarrow{12}$

C. $CH_3CH_3 \xrightarrow[\text{hv}]{CI_2}$

D. $(CH_3)_3\text{CCI} \xrightarrow{C_2H_5OH}$

Answer: C

Watch Video Solution

16. Natural gas is a mixture of

A. $CO + N_2$

B. $CH_4 + C_2H_6 + C_3H_8$

C. $CO + CO_2$

D. $CO + H_2 + CH_4$

Answer: B

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17. 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,it produces CO_2 and H_2O

D. It is a homologue of isobutane

Answer: B

Watch Video Solution

18. To prepare a pure hexane the solution of any one of the following substance is treated with Na. The correct substance is/are

A. ethyl iodide and n-butyl iodide

B. n-pentyl bromide and methyl bromide

C. n-propyl bromide

D. n-butyl bromide

Answer: C

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19. A haloalkane can be reduced to an alkane with the help of HI in presence of red phosphorus. Red phosphorus

A. acts a reducing agent

B. acts as dedydrating agent

C. is used to regenerate HI

D. acts as a catalyst

Answer: C

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20. 2-Brumo butane when treated with Na in the presence of dry ether gives

A. 3,4-dimethyl hexane

B. 3,3-dimethyl hexane

C. hexane

D. none

Answer: A

Watch Video Solution

21. Which of the following will not give pure propane?

A. $CH_3CH_2CI + 2Na + CICH_3 \xrightarrow{\text{ether}}$

B. $CH_3CH_2CH_2COONa \xrightarrow{\text{sodaline}}$

C. $CH_3CH = CH_2 \xrightarrow{H_2 / Pd}$

D. $CH_3C \equiv CH \xrightarrow{H_2/Pd}$

Answer: A

View Text Solution

22. The conversation of liquid hydrocarbon into a mixture of gaseous compound by heat alone is known as

A. Hydrolysis

B. Reduction

C. Oxidation

D. Cracking

Answer: D

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23. Which of the following is not linked with methane?

A. Marsh gas

B. Natural gas

C. Producer gas

D. Coal gas

Answer: C

Watch Video Solution

24. For preparing an alkane a concentrated aqueous solution of sodium or potassium salt of a saturated

caroboxylic acid is subjected to

A. Hydrolysis

B. Oxidation

C. Hydrogenation

D. Electolysis

Answer: D

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25. Among the paraffins it is generally found that with an increase in the molecular weight

A. the freezing point decreases

B. the boiling point decreases

C. the boiling point increases

D. the vapour density decreases

Answer: C

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26. Cyclohexane floats on water because

A. it is immiscible with water

B. its density is less than that of water

C. it is an non-polar substance

D. it is an immiscible and lighter than water

Answer: D

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27. 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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28. During photochemical halogenation of alkanes the halogen molecules first gives

A. Chloride ion

B. Chloronium ion

C. Free radical

D. Carbonium ion

Answer: C

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29. In the chlorination of alkanes, the correct order of reactivity of primary, secondary and tertiary hydrogen atoms is

A. Tertiary-H $>$ Secondary-H $>$ Primary-H

B. Tertiary-H $>$ Primary-H $>$ Secondary-H

C. Primary-H $>$ Secondary-H $>$ Tertiary-H

D. Secondary-H $>$ Primary-H $>$ Tertairy-H

Answer: A

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30. What is the chief product obtained when $n-$ butane is treated with Br_2 in the presence of light at $130^\circ C$?

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

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

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

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

Answer: A

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

A. The numbers of the series have the general formula C_nH_{2n+2}, when n is an integar

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

C. The member of the series are isomers of each other

D. The members of the series have similar chemical products

Answer: C

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32. An alkane forms isomers if the number of carbon atoms is

A. ≥ 1

B. ≥ 2

C. ≥ 3

D. ≥ 4

Answer: D

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33. Reduction of CH_3COCH_3 produces

A. Aldehyde

B. Acid

C. Propane

D. Ketone

Answer: C

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34. A mixture of ethyl iodide and m-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: A

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35. Which is not correct in case of isopentane?

A. There are three $-CH_3$ groups in it

B. There is one $-CH_2$ group in it

C. There is one $-CH$ group in it

D. One hydrogen atom is not bonded to carbon in it

Answer: A

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36. Which of the following statements is not correct?

A. L:ow chemical reactivity of alkane is due to strong

$C-C$ and $C-H$ bond

B. Alkanes show characteristic elimination reactions because they are saturated

C. Reaction of alkane with iodine is generally reversible

D. The reactivity of halogen towards an alkane follows the order $F_2 > CI_2 > Br_2 > I_2$

Answer: B

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37. Which one of the following does not give alkane?

A. Reaction of CH_3I with Na in ether

B. Reaction of sodium acetate with soda lime

C. Electrolysis of concentrated sodium acetate solution

D. Reaction of ethyl chloride with alcoholic KOH

Answer: D

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