

9th CLASS • CHEMISTRY

CHAPTER 11

Hydrocarbons

80 Most Important MCQs
with Detailed Explanations



Annual Exam Preparation Guide

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How to Use This Booklet

- ✓ The correct option is highlighted in green with a tick mark.
- ✓ Every MCQ has a clear explanation right below it.
- ✓ Cover the options, try to answer first, then check.
- ✓ A quick answer key is given at the end for fast revision.

Topics Covered

- ◆ Organic compounds & catenation
- ◆ Saturated hydrocarbons (alkanes)
- ◆ IUPAC nomenclature of alkanes
- ◆ Preparation: cracking & reduction
- ◆ Reactions: substitution & combustion
- ◆ Uses of methane & natural gas

Q1**Which element is considered the essential element in all organic compounds?**

- A Hydrogen
- B Oxygen
- C Carbon**
- D Nitrogen



✓ **Answer: C** **Explanation:** Organic chemistry is fundamentally defined as the chemistry of carbon compounds. While hydrogen and oxygen are frequently present, carbon is the essential, defining element.

Q2**Which of the following compounds is classified as an inorganic compound despite containing carbon?**

- A Methane
- B Ethane
- C Calcium Carbonate**
- D Propane



✓ **Answer: C** **Explanation:** Ionic compounds like carbonates, cyanides, carbides and cyanates are classified as inorganic compounds, even though they contain carbon.

Q3

What unique property of carbon allows it to form long, straight, and branched chains and rings?

- A Tetravalency
- B Catenation**
- C Allotropy
- D Electronegativity



✓ **Answer: B Explanation:** Catenation is the self-linking property of carbon atoms, enabling them to bond with other carbon atoms to form extensive chains and rings.

Q4

How many covalent bonds does a carbon atom generally form?

- A Two
- B Three
- C Four**
- D Five



✓ **Answer: C Explanation:** Carbon is present at the center of the periodic table and does not easily gain or lose electrons. Instead, it shares four electrons, forming four strong covalent bonds.

Q5

Compounds in which carbon forms single bonds with other carbon atoms are called:

- A Unsaturated compounds
- B Saturated compounds** ✓
- C Aromatic compounds
- D Cyclic compounds

✓ **Answer: B** **Explanation:** Saturated compounds are those where carbon atoms are linked only by single bonds, meaning all available valencies of carbon are fully utilized.

Q6

Which of the following is the simplest saturated hydrocarbon?

- A Ethane
- B Propane
- C Methane** ✓
- D Butane

✓ **Answer: C** **Explanation:** Methane (CH_4) consists of a single carbon atom bonded to four hydrogen atoms, making it the simplest saturated hydrocarbon (alkane).

Q7**What is the condensed structural formula for methane?****A** CH_3 **B** CH_4 ✓**C** C_2H_6 **D** CH_2

✓ **Answer: B** **Explanation:** The structural formula shows all bonds, but the condensed form simply groups the atoms together, which for methane is CH_4 .

Q8**Hydrocarbons are organic compounds that contain only:****A** Carbon and oxygen**B** Carbon and hydrogen ✓**C** Hydrogen and oxygen**D** Carbon, hydrogen, and oxygen

✓ **Answer: B** **Explanation:** By definition, the family of hydrocarbons constitutes simple organic compounds containing exclusively carbon and hydrogen atoms.

Q9

Which of the following is NOT a common fuel composed of simple hydrocarbons?

- A LPG
- B CNG
- C Petrol

D Hydrochloric Acid



✓ **Answer: D** **Explanation:** LPG, CNG, petrol and diesel are all mixtures of hydrocarbons. Hydrochloric acid is an inorganic acid.

Q10

Which specific type of hydrocarbons is exclusively discussed in this chapter?

- A Alkenes
- B Alkynes

C Alkanes



D Aromatic hydrocarbons

✓ **Answer: C** **Explanation:** While hydrocarbons are classified into several types, only alkanes are discussed in this chapter.

Q11 What is the general formula for alkanes?

✓ **Answer: B** **Explanation:** Alkanes are saturated hydrocarbons. Because they have the maximum number of hydrogen atoms possible for their carbon skeleton (all single bonds), the formula is C_nH_{2n+2} .

Q12 In the IUPAC system, what does the root “Meth-” indicate?**A** 2 carbon atoms**B** 1 carbon atom ✓**C** 3 carbon atoms**D** 4 carbon atoms

✓ **Answer: B** **Explanation:** According to IUPAC nomenclature rules, the root “Meth-” always signifies a chain of 1 carbon atom.

Q13

The IUPAC name of an organic compound ends with a suffix. What does the suffix “-ane” tell us?

A It is an alkene

B It is an alkyne

C It is an alkane ✓

D It is an alcohol

✓ **Answer: C** **Explanation:** The suffix indicates the class of the organic compound. The suffix “-ane” is specifically used for alkanes.

Q14

What is the IUPAC root name for a continuous chain of 5 carbon atoms?

A But-

B Pent- ✓

C Hex-

D Hept-

✓ **Answer: B** **Explanation:** The root names in order are Meth, Eth, Prop, But, Pent, Hex, Hept, Oct, Non, Dec. Pent- represents 5 carbons.

Q15**How many carbon atoms are present in a molecule named “Decane”?****A** 8**B** 9**C** 10 ✓**D** 12

✓ **Answer: C** **Explanation:** The root “Dec-” corresponds to 10 carbon atoms.

Q16**While naming an organic compound, what is the primary step according to IUPAC rules?****A** Identify the substituents**B** Number the carbon chain**C** Identify the longest continuous chain ✓**D** Add the prefix

✓ **Answer: C** **Explanation:** The very first step in IUPAC nomenclature is to identify the longest continuous chain of carbon atoms present in the molecule, which forms the parent name.

Q17

If a compound has a branched chain, where do you start numbering the carbon chain?

- A From the left side always
- B From the right side always
- C From the end closest to the branch** ✓
- D From the center of the chain

✓ **Answer: C** **Explanation:** To give the substituent the lowest possible number, numbering begins from the end of the chain closest to the branch.

Q18

What is the IUPAC name for a 4-carbon chain with a methyl group attached to the second carbon?

- A 3-Methylbutane
- B 2-Methylbutane** ✓
- C 2-Methylpropane
- D Iso-butane

✓ **Answer: B** **Explanation:** The longest chain has 4 carbons (But-), and the branch (methyl) is on the 2nd carbon, so it is 2-Methylbutane. Numbering is done from the end that gives the lowest number.

Q19

A straight-chain butane with no branches is commonly called:

- A Iso-butane
- B Neo-butane
- C n-butane** ✓
- D Tert-butane

✓ **Answer: C** **Explanation:** The prefix “n-” stands for “normal”, indicating a straight-chain alkane without any branches.

Q20

Which of the following is another name for the branched isomer 2-Methylpropane?

- A n-Butane
- B Iso-butane** ✓
- C Neo-pentane
- D Propane

✓ **Answer: B** **Explanation:** The branched isomer of butane, 2-Methylpropane, is commonly known as iso-butane, while the straight-chain isomer is n-butane.

Q21

What is the distinguishing feature of alkanes that makes them distinct from other compounds?

- A** High reactivity with acids
- B** Lack of reactivity towards usual chemical reagents ✓
- C** Ability to dissolve in water
- D** Formation of ionic bonds

✓ **Answer: B** **Explanation:** Alkanes are known as paraffins ("little affinity") because they are chemically inert and show little chemical affinity for most laboratory reagents.

Q22

In an electron dot structure, what does a shared pair of electrons between two atoms represent?

- A** An ionic bond
- B** A covalent bond ✓
- C** A hydrogen bond
- D** A metallic bond

✓ **Answer: B** **Explanation:** Organic compounds are covalent in nature. Shared pairs of electrons in dot structures represent covalent bonds.

Q23

How many methylene ($-\text{CH}_2-$) groups are present in a molecule of propane?

A 0**B** 1**C** 2**D** 3

✓ **Answer: B** **Explanation:** Propane ($\text{CH}_3-\text{CH}_2-\text{CH}_3$) has two terminal methyl ($-\text{CH}_3$) groups and one central methylene ($-\text{CH}_2-$) group.

Q24

What is the primary method used to prepare alkanes by breaking down higher molecular mass hydrocarbons?

A Hydrogenation**B** Cracking**C** Halogenation**D** Combustion

✓ **Answer: B** **Explanation:** Cracking is the process where higher hydrocarbons (less in demand) are broken down into smaller, more useful hydrocarbons (more in demand) by heating them at high temperatures.

Q25

What catalyst is commonly used in the cracking of naphtha to produce alkanes and alkenes?

A Nickel

B Zeolite ✓

C Platinum

D Iron

✓ **Answer: B** **Explanation:** Naphtha is heated at around 500°C in the presence of a catalyst called zeolite to produce hydrocarbons with five to ten carbon atoms.

Q26

Which of the following cannot be prepared by the reduction of alkenes and alkynes?

A Ethane

B Methane ✓

C Propane

D Butane

✓ **Answer: B** **Explanation:** Methane cannot be prepared by the reduction of alkenes and alkynes because these start with a carbon skeleton of at least two carbon atoms.

Q27

The addition of hydrogen to an alkene in the presence of a nickel catalyst is an example of:

- A Substitution reaction
- B Elimination reaction
- C Addition reaction** ✓
- D Combustion reaction

✓ **Answer: C** **Explanation:** Hydrogenation of alkenes/alkynes is an addition reaction, where hydrogen atoms are added across the double or triple bond.

Q28

What temperature is required for the hydrogenation of alkenes using a nickel catalyst?

- A 100°C
- B 200°C** ✓
- C 300°C
- D 500°C

✓ **Answer: B** **Explanation:** The reaction conditions are 200°C in the presence of a nickel (Ni) catalyst.

Q29

In the reduction of alkyl halides, which pair of reagents is used to generate hydrogen in situ?

A Zinc and Hydrochloric acid ✓

B Nickel and Hydrogen gas

C Copper and Sulfuric acid

D Sodium and Water

✓ **Answer: A** **Explanation:** Alkyl halides (R-X) are reduced to alkanes using hydrogen generated by the reaction of zinc metal with hydrochloric acid (Zn/HCl).

Q30

What is the chemical formula of the alkyl halide commonly known as chloromethane?

A CH_4

B CH_3Cl ✓

C CH_2Cl_2

D CHCl_3

✓ **Answer: B** **Explanation:** Chloromethane consists of one carbon, three hydrogens and one chlorine atom, giving it the formula CH_3Cl .

Q31

Alkanes are sometimes referred to as “paraffins”. What does this term literally mean?

- A High reactivity
- B Little affinity**
- C Double bonds
- D Saturated



✓ **Answer: B** **Explanation:** “Paraffins” means “little affinity”, describing the chemical inertness of alkanes towards most reagents.

Q32

Why are alkanes chemically inert towards most laboratory reagents?

- A They have high polarity
- B They have non-polar bonds**
- C They are ionic compounds
- D They have double bonds



✓ **Answer: B** **Explanation:** The C-C and C-H bonds in alkanes are almost non-polar because the electronegativity values of carbon (2.6) and hydrogen (2.1) are very close, so electrons are shared almost equally.

Q33

What are the electronegativity values of carbon and hydrogen, respectively, as stated in the text?

A 2.1 and 2.6

B 2.6 and 2.1 ✓

C 2.5 and 2.1

D 2.6 and 2.5

✓ **Answer: B** **Explanation:** The text provides the electronegativity values: Carbon is 2.6 and Hydrogen is 2.1. This small difference results in non-polar bonds.

Q34

Which type of reaction involves the replacement of a hydrogen atom in an alkane by a halogen atom?

A Addition reaction

B Substitution reaction ✓

C Elimination reaction

D Polymerization

✓ **Answer: B** **Explanation:** Alkanes undergo substitution reactions, where one atom or a group of atoms is replaced by another atom or group of atoms (like halogens).

Q35**What specific condition is required for the halogenation of alkanes with chlorine?**

- A High pressure
- B Low temperature
- C Ultraviolet light** ✓
- D Presence of water

✓ **Answer: C** **Explanation:** Because these substitution reactions are carried out in the presence of UV light, they are called photochemical substitution reactions.

Q36**What is the chemical formula for dichloromethane?**

- A CH_3Cl
- B CH_2Cl_2** ✓
- C CHCl_3
- D CCl_4

✓ **Answer: B** **Explanation:** Dichloromethane has one carbon, two hydrogens and two chlorine atoms, making the formula CH_2Cl_2 .

Q37**Which compound is commonly known as chloroform?**

✓ **Answer: B** **Explanation:** Trichloromethane (CHCl_3) is commonly known as chloroform.

Q38**What is the final product when all hydrogen atoms of methane are replaced by chlorine?****A** Trichloromethane**B** Dichloromethane**C** **Tetrachloromethane** ✓**D** Chloromethane

✓ **Answer: C** **Explanation:** The reaction can proceed until all four hydrogens are replaced. The final product is tetrachloromethane (CCl_4), also known as carbon tetrachloride.

Q39**What are the products of the complete combustion of alkanes?****A** CO and H₂**B** CO₂ and H₂O ✓**C** C and H₂O**D** CO₂ and H₂

✓ **Answer: B** **Explanation:** Alkanes burn in oxygen or air to form carbon dioxide (CO₂) and water (H₂O) with the evolution of a large amount of heat.

Q40**What is the balanced chemical equation for the combustion of methane?****A** CH₄ + O₂ → CO₂ + H₂O**B** CH₄ + 2O₂ → CO₂ + 2H₂O ✓**C** 2CH₄ + 3O₂ → 2CO₂ + 4H₂O**D** CH₄ + 3O₂ → CO₂ + 2H₂O

✓ **Answer: B** **Explanation:** The balanced equation requires 2 molecules of oxygen to react with 1 molecule of methane, producing 1 molecule of CO₂ and 2 molecules of H₂O.

Q41

How many molecules of oxygen are required for the complete combustion of 2 molecules of ethane?

A 5**B** 6**C** 7 ✓**D** 8

✓ **Answer: C** **Explanation:** The balanced equation is $2\text{C}_2\text{H}_6 + 7\text{O}_2 \rightarrow 4\text{CO}_2 + 6\text{H}_2\text{O}$. Therefore, 7 molecules of oxygen are needed.

Q42

Why is a mixture of natural gas and air dangerous?

A It causes corrosion**B** It can explode when ignited ✓**C** It is toxic to breathe**D** It causes global warming

✓ **Answer: B** **Explanation:** A mixture of natural gas (methane) and air can explode when ignited, which is the main cause of explosions in homes where gas leakage occurs.

Q43**Which of the following is NOT a product of the complete combustion of alkanes?**

- A** Carbon dioxide
- B** Water
- C** Heat

D Carbon monoxide

✓ **Answer: D** **Explanation:** Complete combustion produces CO_2 , H_2O and heat. Carbon monoxide (CO) is a product of incomplete combustion.

Q44**What is the general formula for an alkyl group?****A** $\text{C}_n\text{H}_{2n+1}$ **B** $\text{C}_n\text{H}_{2n+2}$ **C** $\text{C}_n\text{H}_{2n-1}$ **D** C_nH_{2n}

✓ **Answer: A** **Explanation:** An alkyl group is an alkane that has lost one hydrogen atom. Therefore, its formula is $\text{C}_n\text{H}_{2n+1}$ (e.g., methyl is CH_3-).

Q45

What is the IUPAC name for the compound $\text{CH}_3\text{-CH}(\text{CH}_3)\text{-CH}_2\text{-CH}_3$?

A 3-Methylbutane

B 2-Methylbutane ✓

C 2-Methylpropane

D Pentane

✓ **Answer: B** **Explanation:** The longest chain has 4 carbons (butane). Numbering from the left end gives the methyl branch the lowest number, so the name is 2-Methylbutane.

Q46

Which of the following statements about organic compounds is FALSE?

A They are covalent in nature

B They have low melting and boiling points

C They are generally soluble in water ✓

D They contain carbon as an essential element

✓ **Answer: C** **Explanation:** Organic compounds are generally covalent and non-polar, so they do NOT dissolve readily in water (a polar solvent). They are soluble in organic solvents.

Q47**The process of cracking is essential in the petroleum industry because:**

- A** It increases the octane number
- B** It balances the supply and demand of petroleum fractions ✓
- C** It removes impurities
- D** It produces aromatic compounds

✓ **Answer: B** **Explanation:** Cracking converts less useful, heavier hydrocarbons into more useful, lighter hydrocarbons (like petrol), thereby balancing the availability of petroleum fractions with market demand.

Q48**What is the distinguishing feature of the C-C bonds in alkanes?**

- A** They are double bonds
- B** They are triple bonds
- C** They are single bonds ✓
- D** They are ionic bonds

✓ **Answer: C** **Explanation:** Alkanes are saturated hydrocarbons, meaning they contain only single bonds between carbon atoms.

Q49**Which root word is used for a chain of 7 carbon atoms?****A** Hex-**B** Hept- ✓**C** Oct-**D** Non-

✓ **Answer: B** **Explanation:** The table of root names indicates that Hept- corresponds to 7 carbon atoms.

Q50**In the reduction of CH_3Cl to CH_4 using Zn/HCl , what is the role of Zn/HCl ?****A** It acts as a catalyst**B** It generates hydrogen for reduction ✓**C** It acts as an oxidizing agent**D** It acts as a solvent

✓ **Answer: B** **Explanation:** Alkyl halides are reduced to alkanes with hydrogen generated by the reaction of zinc metal with hydrochloric acid.

Q51**Which of the following is an example of a saturated hydrocarbon?**

- A** Ethene (C_2H_4)
- B** Ethyne (C_2H_2)
- C** Ethane (C_2H_6) ✓
- D** Benzene (C_6H_6)

✓ **Answer: C** **Explanation:** Ethane is an alkane with single bonds only, making it saturated. Ethene and ethyne are unsaturated.

Q52**What is the primary characteristic of a substitution reaction?**

- A** Atoms are added across a double bond
- B** One atom or group is replaced by another ✓
- C** Water is eliminated
- D** Heat is always absorbed

✓ **Answer: B** **Explanation:** In a substitution reaction, one atom or a group of atoms in a molecule is replaced by another atom or group of atoms.

Q53

What is the source of the hydrogen used in the hydrogenation of alkenes?

A Water

B Hydrogen gas (H_2) ✓

C Hydrochloric acid

D Methane

✓ **Answer: B** **Explanation:** Alkenes and alkynes are reduced with hydrogen gas in the presence of a nickel catalyst.

Q54

The reaction $CH_2=CH_2 + H_2 \rightarrow CH_3-CH_3$ is an example of:

A Substitution

B Addition ✓

C Combustion

D Cracking

✓ **Answer: B** **Explanation:** This is an addition reaction where hydrogen is added across the double bond of ethene to form ethane.

Q55**Which of the following is NOT a characteristic of alkanes?**

- A They are saturated
- B They are highly reactive** ✓
- C They undergo combustion
- D They undergo substitution with chlorine

✓ **Answer: B** **Explanation:** Alkanes are known for their lack of reactivity (paraffins) towards most reagents, not high reactivity.

Q56**In the IUPAC name “2-Methylbutane”, what does the “2” indicate?**

- A The number of methyl groups
- B The position of the methyl group on the parent chain** ✓
- C The number of carbon atoms in the parent chain
- D The boiling point

✓ **Answer: B** **Explanation:** The number indicates the position of the substituent (methyl group) on the longest continuous carbon chain (butane).

Q57 What is the molecular formula of propane?

A CH_4

B C_2H_6

C C_3H_8 ✓

D C_4H_{10}

✓ **Answer: C** **Explanation:** Using the general formula $\text{C}_n\text{H}_{2n+2}$ with $n = 3$ gives C_3H_8 .

Q58 Which compound is formed first when methane reacts with chlorine in the presence of sunlight?

A Methanol

B Chloromethane ✓

C Dichloromethane

D Carbon tetrachloride

✓ **Answer: B** **Explanation:** The first substitution product is chloromethane (CH_3Cl), although further substitution can occur.

Q59**What is the byproduct formed in the halogenation of methane with chlorine?**

- A** Water
- B** Hydrogen gas
- C** **Hydrogen chloride** ✓
- D** Carbon dioxide

✓ **Answer: C** **Explanation:** For every hydrogen replaced by chlorine, a molecule of HCl is released (e.g., $\text{CH}_4 + \text{Cl}_2 \rightarrow \text{CH}_3\text{Cl} + \text{HCl}$).

Q60**How many hydrogen atoms are present in a molecule of ethane?**

- A** 4
- B** **6** ✓
- C** 8
- D** 10

✓ **Answer: B** **Explanation:** Ethane has the formula C_2H_6 , meaning it contains 6 hydrogen atoms.

Q61**Which of the following is an unsaturated hydrocarbon?**

- A Methane
- B Propane
- C Ethene** ✓
- D Butane

✓ **Answer: C** **Explanation:** Ethene contains a double bond ($C=C$), making it unsaturated. The others are alkanes (saturated).

Q62**Cracking of higher hydrocarbons is done by heating them at high temperatures in the presence of:**

- A Water
- B A catalyst** ✓
- C Oxygen
- D UV light

✓ **Answer: B** **Explanation:** Cracking requires high temperature and the presence of a catalyst (like zeolite) to break the larger hydrocarbon molecules.

Q63 The formula $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_3$ represents:

A Iso-butane

B n-Butane ✓

C 2-Methylpropane

D Propane

✓ **Answer: B** **Explanation:** This is a straight chain of 4 carbon atoms with no branches, hence normal butane (n-butane).

Q64 Which of the following is a use of methane?

A As a fuel

B To make carbon black

C To make hydrogen gas

D All of the above ✓

✓ **Answer: D** **Explanation:** Methane is used as a fuel and to make hydrogen gas, carbon black, carbon disulphide, chloroform and hydrocyanic acid.

Q65**What is the physical state of alkanes at room temperature?****A** Always solid**B** Always liquid**C** Gas, liquid or solid depending on size**D** Always gas

✓ **Answer: C** **Explanation:** LPG and CNG (small alkanes) are gases, petrol and diesel (medium-sized alkanes) are liquids, and the larger alkanes are solids.

Q66**How many covalent bonds are present in a molecule of methane?****A** 2**B** 3**C** 4**D** 5

✓ **Answer: C** **Explanation:** Methane (CH_4) has one carbon atom forming four single covalent bonds with four hydrogen atoms.

Q67

The reaction of an alkane with oxygen to produce heat is called:

- A Halogenation
- B Cracking
- C Combustion** ✓
- D Hydrogenation

✓ **Answer: C** **Explanation:** Combustion is the reaction of alkanes with oxygen to produce CO_2 , H_2O and a large amount of heat.

Q68

Which of the following is NOT a member of the alkane family?

- A CH_4
- B C_2H_6
- C C_2H_4** ✓
- D C_3H_8

✓ **Answer: C** **Explanation:** C_2H_4 is ethene, an alkene (unsaturated). The general formula for alkanes is $\text{C}_n\text{H}_{2n+2}$, which C_2H_4 does not fit.

Q69

What is the correct IUPAC name for $\text{CH}_3\text{-CH}_2\text{-CH}_3$?

A Methane

B Ethane

C Propane ✓

D Butane

✓ **Answer: C** **Explanation:** There are 3 carbon atoms in a continuous chain, so the root is Prop- and the suffix is -ane, giving Propane.

Q70

In the reaction $2\text{C}_2\text{H}_6 + 7\text{O}_2 \rightarrow 4\text{CO}_2 + 6\text{H}_2\text{O}$, what is the coefficient of oxygen?

A 2

B 4

C 6

D 7 ✓

✓ **Answer: D** **Explanation:** The balanced chemical equation shows that 7 molecules of oxygen (7O_2) are required for the complete combustion of 2 molecules of ethane.

Q71**Which of the following is a characteristic of organic compounds?**

- A They are generally ionic
- B They have high melting points
- C They are generally covalent** ✓
- D They conduct electricity in solution

✓ **Answer: C** **Explanation:** Organic compounds are covalent in nature, which generally results in low melting and boiling points and poor electrical conductivity.

Q72**What is the structural formula of ethane?**

- A CH_4
- B $\text{CH}_3\text{-CH}_3$** ✓
- C $\text{CH}_2=\text{CH}_2$
- D $\text{CH}\equiv\text{CH}$

✓ **Answer: B** **Explanation:** Ethane (C_2H_6) consists of two methyl groups connected by a single bond, represented as $\text{CH}_3\text{-CH}_3$.

Q73

Which halogen is specifically mentioned in the text for reacting with alkanes in photochemical substitution?

A Fluorine

B Chlorine ✓

C Bromine

D Iodine

✓ **Answer: B** **Explanation:** The text focuses on the reaction of alkanes with chlorine (Cl_2) in the presence of UV light.

Q74

What is the IUPAC name for a 6-carbon continuous chain alkane?

A Pentane

B Hexane ✓

C Heptane

D Octane

✓ **Answer: B** **Explanation:** The root for 6 carbon atoms is "Hex-", so the alkane is Hexane.

Q75**Why is the reaction of alkanes with chlorine called a photochemical reaction?**

- A** It occurs in the dark
- B** It requires ultraviolet light ✓
- C** It produces light
- D** It requires high pressure

✓ **Answer: B** **Explanation:** The term “photochemical” implies that light (specifically UV light) is required to initiate the reaction.

Q76**How many methyl groups are present in 2-Methylbutane?**

- A** 1
- B** 2
- C** 3 ✓
- D** 4

✓ **Answer: C** **Explanation:** The structure is $\text{CH}_3\text{-CH}(\text{CH}_3)\text{-CH}_2\text{-CH}_3$. There are two terminal CH_3 groups plus one CH_3 branch, totaling three methyl groups.

Q77**Which of the following is an example of a reduction reaction?**

- A** $\text{CH}_4 + \text{Cl}_2 \rightarrow \text{CH}_3\text{Cl} + \text{HCl}$
- B** $\text{CH}_2=\text{CH}_2 + \text{H}_2 \rightarrow \text{CH}_3-\text{CH}_3$ ✓
- C** $\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$
- D** Naphtha $\rightarrow$ Alkanes + Alkenes

✓ **Answer: B** **Explanation:** The addition of hydrogen to an alkene (hydrogenation) is classified as a reduction reaction.

Q78**What is the state of the bonds in a molecule of ethene?**

- A** All single bonds
- B** One double bond and four single bonds ✓
- C** One triple bond and two single bonds
- D** All double bonds

✓ **Answer: B** **Explanation:** Ethene (C_2H_4) has a $\text{C}=\text{C}$ double bond and four $\text{C}-\text{H}$ single bonds.

Q79 The term “cracking” is associated with:

- A Combining small hydrocarbons
- B Breaking large hydrocarbons into smaller ones** ✓
- C Adding hydrogen to alkenes
- D Replacing hydrogen with chlorine

✓ **Answer: B** **Explanation:** Cracking is the process of breaking down higher molecular mass hydrocarbons into smaller, more useful ones.

Q80 Which of the following statements about the structural formula is TRUE?

- A It shows the symbols of atoms connected by short lines representing bonds** ✓
- B It only shows the condensed form of the molecule
- C It does not show the bonds between atoms
- D It only applies to inorganic compounds

✓ **Answer: A** **Explanation:** A structural formula shows the symbols for the atoms present in the compound connected by short lines which represent the bonds present in them.

Quick Answer Key

1. C	21. B	41. C	61. C
2. C	22. B	42. B	62. B
3. B	23. B	43. D	63. B
4. C	24. B	44. A	64. D
5. B	25. B	45. B	65. C
6. C	26. B	46. C	66. C
7. B	27. C	47. B	67. C
8. B	28. B	48. C	68. C
9. D	29. A	49. B	69. C
10. C	30. B	50. B	70. D
11. B	31. B	51. C	71. C
12. B	32. B	52. B	72. B
13. C	33. B	53. B	73. B
14. B	34. B	54. B	74. B
15. C	35. C	55. B	75. B
16. C	36. B	56. B	76. C
17. C	37. B	57. C	77. B
18. B	38. C	58. B	78. B
19. C	39. B	59. C	79. B
20. B	40. B	60. B	80. A

CHAPTER 11 • HYDROCARBONS

Thank You!

You have completed all 80 MCQs.

Revise. Practise. Succeed.

Wishing you the very best in your annual exams!

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