Foundations of Organic Chemistry

Organic Chemistry · Answer Key · 25 Questions

1. Which element is the fundamental backbone of all organic compounds?

A) Nitrogen
B) Carbon
C) Oxygen
D) Hydrogen

2. What is the general chemical formula for a saturated alkane with 'n' carbon atoms?

A) CnHn
B) CnH2n
C) CnH2n+2
D) CnH2n-2

3. Which functional group is characterized by a carbon atom double-bonded to an oxygen atom and single-bonded to a hydroxyl group?

A) Alcohol
B) Ketone
C) Carboxylic acid
D) Ether

4. Which organic molecule is the simplest hydrocarbon?

A) Methane
B) Ethane
C) Propane
D) Butane

5. What are isomers in the context of organic chemistry?

A) Compounds with the same atoms but different arrangements
B) Compounds with different chemical formulas
C) Compounds that cannot form bonds
D) Compounds that only contain carbon and hydrogen

6. Which of these molecules represents a cyclic hydrocarbon?

A) Hexane
B) Benzene
C) Octane
D) Pentane

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7. In organic nomenclature, what suffix is used to indicate the presence of an alcohol group?

A) -one
B) -ane
C) -ol
D) -ene

8. What type of bond is primarily responsible for the stability of the carbon backbone in organic molecules?

A) Ionic
B) Covalent
C) Metallic
D) Hydrogen

9. What is the term for a hydrocarbon that contains at least one carbon-carbon double bond?

A) Alkane
B) Alkyne
C) Alkene
D) Aromatic

10. Which element, when substituted for hydrogen in a hydrocarbon, creates an alkyl halide?

A) Helium
B) Neon
C) Halogen
D) Argon

11. What is the chemical formula for Methane?

A) CH_4
B) C_2H_6
C) CH_3OH
D) C_3H_8

12. Which of the following organic compounds is a key component of vinegar?

A) Ethanol
B) Acetic acid
C) Acetone
D) Formaldehyde

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13. What is the characteristic feature of a 'saturated' hydrocarbon?

A) It contains double bonds
B) It contains triple bonds
C) It only contains single bonds
D) It is a gas at room temperature

14. Which process involves joining small organic monomers to form long-chain polymers?

A) Combustion
B) Polymerization
C) Neutralization
D) Oxidation

15. What is the IUPAC name for a three-carbon alkane chain?

A) Methane
B) Ethane
C) Propane
D) Butane

16. Which group of organic compounds generally follows the formula CnH2n?

A) Alkanes
B) Alkenes
C) Alkynes
D) Alcohols

17. What is the primary organic compound used in the production of PET plastics?

A) Ethylene glycol
B) Methane
C) Benzene
D) Propane

18. Which organic compound is most commonly known as the solvent in nail polish remover?

A) Methanol
B) Acetone
C) Ethanoic acid
D) Glucose

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19. What is the shape of a carbon atom bonded to four other atoms in a tetrahedral arrangement?

A) Planar
B) Linear
C) Tetrahedral
D) Octahedral

20. Which of these is considered a carbohydrate?

A) Glucose
B) Methane
C) Ethane
D) Ethanol

21. What do we call the organic compounds that contain a benzene ring?

A) Aliphatic
B) Aromatic
C) Alicyclic
D) Heterocyclic

22. What is the simplest alkyne, containing a carbon-carbon triple bond?

A) Ethene
B) Ethyne
C) Propene
D) Butyne

23. Which functional group gives organic acids their characteristic properties?

A) Hydroxyl group
B) Carboxyl group
C) Amino group
D) Carbonyl group

24. How many covalent bonds does a single neutral carbon atom typically form in an organic molecule?

A) 2
B) 3
C) 4
D) 5

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25. Which molecule is the simplest member of the ketone family?

A) Propanone

B) Ethanone

C) Butanone

D) Pentanone