

Fundamentals of Organic Chemistry

Organic Chemistry · Answer Key · 25 Questions

1. What is the defining element present in all organic compounds?

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

2. Which hydrocarbon series consists of molecules with only single covalent bonds between carbon atoms?

- A) Alkanes**
- B) Alkenes
- C) Alkynes
- D) Arenes

3. What is the chemical formula for methane, the simplest alkane?

- A) CH₂
- B) C₂H₆
- C) CH₄**
- D) C₃H₈

4. Which functional group is characteristic of alcohols?

- A) -COOH
- B) -OH**
- C) -NH₂
- D) -CHO

5. What type of bond is formed when two atoms share a pair of electrons in an organic molecule?

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

6. Which process involves the breakdown of long-chain hydrocarbons into smaller, more useful molecules?

- A) Polymerization
- B) Cracking**
- C) Distillation
- D) Oxidation

7. What is the general formula for a non-cyclic alkene?

A) C_nH_{2n+2}

B) C_nH_{2n}

C) C_nH_{2n-2}

D) C_nH_n

8. Which substance is the primary monomer used to produce polyethylene plastic?

A) Propene

B) Butene

C) Ethene

D) Benzene

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

A) Methane

B) Ethane

C) Propane

D) Butane

10. Which of these molecules contains a triple bond between two carbon atoms?

A) Ethane

B) Ethene

C) Ethyne

D) Propane

11. What functional group is found in carboxylic acids?

A) -OH

B) -COOH

C) -CHO

D) -CO-

12. Which hydrocarbon is the primary component of natural gas?

A) Propane

B) Methane

C) Butane

D) Octane

13. In organic chemistry, what does the prefix 'meth-' indicate in a carbon chain?

A) 1 carbon atom

B) 2 carbon atoms

C) 3 carbon atoms

D) 4 carbon atoms

14. What is the name of the simplest aromatic hydrocarbon?

- A) Cyclohexane
- B) Benzene**
- C) Toluene
- D) Phenol

15. Which element, other than carbon, is most commonly bonded to carbon in hydrocarbons?

- A) Oxygen
- B) Nitrogen
- C) Hydrogen**
- D) Sulfur

16. What is the term for compounds that have the same molecular formula but different structural arrangements?

- A) Isotopes
- B) Isomers**
- C) Allotropes
- D) Polymers

17. Which functional group is present in aldehydes?

- A) -OH
- B) -COOH
- C) -CHO**
- D) -NH₂

18. What process turns liquid vegetable oils into solid fats by adding hydrogen?

- A) Hydrogenation**
- B) Oxidation
- C) Combustion
- D) Esterification

19. What is the total number of valence electrons in a neutral carbon atom?

- A) 2
- B) 4**
- C) 6
- D) 8

20. Which organic family contains the functional group -NH₂?

A) Amines

B) Amides

C) Esters

D) Ethers

21. What type of reaction occurs when an acid reacts with an alcohol to form an ester?

A) Neutralization

B) Esterification

C) Cracking

D) Substitution

22. Which of the following is a saturated hydrocarbon?

A) Ethene

B) Ethyne

C) Propane

D) Benzene

23. What property refers to the resistance of a liquid to flow?

A) Volatility

B) Viscosity

C) Solubility

D) Density

24. Which group of organic compounds is commonly used as solvents and perfumes due to their pleasant scents?

A) Esters

B) Alkanes

C) Acids

D) Amines

25. What is the IUPAC name of the molecule CH₃CH₂OH?

A) Methanol

B) Ethanol

C) Propanol

D) Butanol