

Advanced Chemistry Fundamentals

Chemistry · Practice Test · 18 Questions

1. What is the common name for the phenomenon where certain solid compounds sublime at standard temperature and pressure, transitioning directly from solid to gas without passing through a liquid phase?

- A) Decomposition
- B) Sublimation
- C) Vaporization
- D) Deposition

2. Which of the following elements is a metalloid and is known for its semiconductor properties, commonly used in transistors?

- A) Gallium
- B) Germanium
- C) Indium
- D) Arsenic

3. The Haber-Bosch process is a critical industrial method for synthesizing which essential compound?

- A) Sulfuric Acid
- B) Ammonia
- C) Methanol
- D) Nitric Acid

4. What is the approximate atomic mass of a single atom of Carbon-12 in atomic mass units (amu)?

- A) 10
- B) 11
- C) 12
- D) 13

5. Which type of chemical bonding involves the sharing of electron pairs between atoms?

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

6. The term 'enantiomers' in organic chemistry refers to stereoisomers that are:

- A) Identical
- B) Superimposable mirror images
- C) Non-superimposable mirror images
- D) Geometric isomers

7. Which of the following is a strong oxidizing agent commonly used in laboratory settings and industrial processes?

- A) Sodium Chloride
- B) Hydrogen Peroxide
- C) Potassium Permanganate
- D) Sodium Hydroxide

8. What is the SI unit of luminous intensity?

- A) Lux
- B) Candela
- C) Lumen
- D) Watt

9. The rate-determining step in a multi-step chemical reaction is the step that:

- A) Is the fastest
- B) Is the slowest
- C) Has the highest activation energy
- D) Produces the most product

10. Which element has the highest electronegativity on the Pauling scale?

- A) Oxygen
- B) Chlorine
- C) Fluorine
- D) Nitrogen

11. What is the common name for the functional group -COOH?

- A) Aldehyde
- B) Ketone
- C) Carboxylic acid
- D) Ester

12. The phenomenon where certain metal ions can form stable complexes with organic molecules containing donor atoms like nitrogen or oxygen is central to the function of:

- A) Electrolysis
- B) Chelation
- C) Polymerization
- D) Catalysis

13. Which noble gas is the most abundant in Earth's atmosphere by volume?

- A) Helium
- B) Neon
- C) Argon
- D) Krypton

14. What is the approximate value of the gas constant (R) in units of J/(mol·K)?

- A) 8.314
- B) 0.0821
- C) 6.022×10^{23}
- D) 1.602×10^{-19}

15. The process by which a solute is uniformly distributed throughout a solvent is known as:

- A) Precipitation
- B) Evaporation
- C) Dissolution
- D) Filtration

16. What is the molecular formula of glucose?

- A) C₅H₁₀O₅
- B) C₆H₁₂O₆
- C) C₁₂H₂₂O₁₁
- D) C₆H₆

17. Which of the following is a characteristic property of a strong electrolyte?

- A) Low conductivity in solution
- B) Little or no ionization in solution
- C) Complete ionization in solution
- D) Does not dissociate into ions

18. The IUPAC name for the compound CH_3COCH_3 is:

- A) Ethanol
- B) Propanal
- C) Acetone
- D) Propanone