

High School Chemistry Assessment

Chemistry · Answer Key · 18 Questions

1. Which subatomic particle is primarily responsible for determining the chemical properties of an element?

- A) Neutrons
- B) Protons
- C) Valence electrons**
- D) Inner-shell electrons

2. What is the chemical formula for the compound formed between magnesium and chlorine?

- A) MgCl
- B) Mg₂Cl
- C) MgCl₂**
- D) Mg₂Cl₂

3. In a redox reaction, what term describes the gain of electrons by an atom or ion?

- A) Oxidation
- B) Reduction**
- C) Neutralization
- D) Ionization

4. What is the molar mass of water (H₂O) in grams per mole, given atomic masses of H=1 and O=16?

- A) 17 g/mol
- B) 18 g/mol**
- C) 32 g/mol
- D) 34 g/mol

5. Which bond type involves the sharing of electron pairs between two non-metal atoms?

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

6. What does the pH scale measure in an aqueous solution?

- A) Concentration of hydroxide ions
- B) Concentration of hydrogen ions**
- C) Electrical conductivity
- D) Solubility of salts

7. Which element is the primary component of all organic compounds?

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

8. According to the kinetic molecular theory, what happens to the particles of a gas when temperature increases?

- A) They stop moving
- B) They condense
- C) Their average kinetic energy increases**
- D) They become heavier

9. What is the geometric shape of a methane (CH₄) molecule?

- A) Linear
- B) Bent
- C) Trigonal planar
- D) Tetrahedral**

10. Which law states that the total mass of reactants equals the total mass of products in a chemical reaction?

- A) Law of Conservation of Mass**
- B) Law of Definite Proportions
- C) Law of Multiple Proportions
- D) Boyle's Law

11. Which group in the periodic table contains the alkali metals?

- A) Group 1**
- B) Group 2
- C) Group 17
- D) Group 18

12. What is the process of converting a solid directly into a gas called?

- A) Evaporation
- B) Condensation
- C) Sublimation**
- D) Deposition

13. What is the concentration unit defined as moles of solute per liter of solution?

- A) Molality
- B) Molarity**
- C) Normality
- D) Mole fraction

14. Which of these describes a strong acid in water?

- A) Partially dissociates
- B) Completely ionizes**
- C) Does not dissociate
- D) Has a high pH

15. Which period in the periodic table corresponds to the filling of the $n=2$ energy level?

- A) Period 1
- B) Period 2**
- C) Period 3
- D) Period 4

16. What is the term for the energy required to remove an electron from a gaseous atom?

- A) Electronegativity
- B) Electron affinity
- C) Ionization energy**
- D) Bond energy

17. Which type of radiation consists of a helium nucleus?

- A) Alpha**
- B) Beta
- C) Gamma
- D) X-ray

18. Which substance acts as a base according to the Brønsted-Lowry theory?

- A) Proton donor
- B) Proton acceptor**
- C) Electron donor
- D) Electron acceptor