

Advanced Chemistry for Young Scientists

Chemistry · Answer Key · 12 Questions

1. Which subatomic particle was discovered by J.J. Thomson in 1897 using a cathode ray tube?

- A) Proton
- B) Neutron
- C) Electron**
- D) Positron

2. What is the name for the amount of substance that contains exactly $6.02214076 \times 10^{23}$ elementary entities?

- A) Mole**
- B) Gram
- C) Dalton
- D) Liter

3. In the periodic table, what is the collective name for the elements in Group 18?

- A) Alkali metals
- B) Noble gases**
- C) Halogens
- D) Transition metals

4. Which chemical bond involves the equal sharing of electron pairs between atoms?

- A) Ionic bond
- B) Metallic bond
- C) Nonpolar covalent bond**
- D) Hydrogen bond

5. What is the most abundant element in the Earth's atmosphere by volume?

- A) Oxygen
- B) Carbon Dioxide
- C) Argon
- D) Nitrogen**

6. Which law states that the pressure of a given mass of an ideal gas is inversely proportional to its volume at a constant temperature?

- A) Boyle's Law**
- B) Charles's Law
- C) Avogadro's Law
- D) Dalton's Law

7. What is the chemical formula for sulfuric acid?

- A) HCl
- B) HNO₃
- C) H₂SO₄**
- D) CH₄

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

- A) Cesium
- B) Fluorine**
- C) Helium
- D) Oxygen

9. What process involves a solid turning directly into a gas without passing through the liquid phase?

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

10. Which shell model component represents the maximum number of electrons that can occupy the first energy level?

- A) 2**
- B) 8
- C) 18
- D) 32

11. What type of reaction occurs when a substance reacts rapidly with oxygen and releases energy in the form of light and heat?

- A) Neutralization
- B) Combustion**
- C) Precipitation
- D) Synthesis

12. Which scientist is credited with creating the first recognizable version of the Periodic Table of Elements?

- A) Marie Curie
- B) Isaac Newton
- C) Dmitri Mendeleev**
- D) Albert Einstein