

Advanced High School Chemistry Challenge

Chemistry · Practice Test · 10 Questions

1. Which element has the highest first ionization energy in the periodic table?

- A) Helium
- B) Fluorine
- C) Neon
- D) Hydrogen

2. What is the formal name of the process by which a solid transitions directly into a gas without passing through the liquid phase?

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

3. In a voltaic cell, which electrode is defined as the site where reduction occurs?

- A) Anode
- B) Cathode
- C) Salt bridge
- D) Electrolyte

4. Which scientist is credited with proposing the Law of Octaves, noting that elements exhibit repeating properties every eighth element?

- A) Dmitri Mendeleev
- B) John Newlands
- C) Henry Moseley
- D) Lothar Meyer

5. What is the molecular geometry of a molecule with a central atom bonded to four other atoms with no lone pairs, such as methane (CH₄)?

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

6. According to the Arrhenius definition, what is produced when an acid dissociates in an aqueous solution?

- A) Hydroxide ions
- B) Hydrogen ions
- C) Chloride ions
- D) Ammonium ions

7. What is the standard unit used to describe the enthalpy of a chemical reaction?

- A) Joules per mole
- B) Newtons per square meter
- C) Watts
- D) Kelvin

8. Which quantum number describes the shape of the orbital in which an electron resides?

- A) Principal
- B) Magnetic
- C) Spin
- D) Azimuthal

9. What is the maximum number of electrons that can be held in a 'd' subshell?

- A) 2
- B) 6
- C) 10
- D) 14

10. Which law states that the total pressure of a mixture of non-reacting gases is equal to the sum of the partial pressures of the individual gases?

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