Advanced Chemistry Fundamentals

Chemistry · Practice Test · 8 Questions

1. Which law of thermodynamics states that the entropy of a perfect crystal at absolute zero is exactly zero?

A) First Law
B) Second Law
C) Third Law
D) Zeroth Law

2. In chemical kinetics, what is the term for the minimum energy required for a chemical reaction to occur?

A) Enthalpy
B) Activation Energy
C) Gibbs Free Energy
D) Entropy

3. What is the geometry of a methane molecule (CH4)?

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

4. Which bond type involves the equal sharing of electrons between two atoms?

A) Polar covalent
B) Nonpolar covalent
C) Ionic
D) Hydrogen

5. What substance acts as a biological catalyst by lowering the activation energy of reactions?

A) Enzyme
B) Isotope
C) Electrolyte
D) Buffer

6. Which periodic trend refers to the energy required to remove an electron from a neutral atom in the gas phase?

A) Electronegativity
B) Atomic radius
C) Ionization energy
D) Electron affinity

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7. According to the Arrhenius definition, what ion is produced when an acid is dissolved in water?

A) Hydroxide (OH-)
B) Hydronium (H3O+)
C) Sodium (Na+)
D) Chloride (Cl-)

8. What is the relationship between the pressure and volume of a gas at constant temperature, as described by Boyle's Law?

A) Directly proportional
B) Inversely proportional
C) Unrelated
D) Exponentially increasing

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