Name: _____ **Date:** _____

Supercritical Fluids and Phase Diagrams: 9th Grade Chemistry Quiz

Enthalpy of fusion, vapor pressure curves, and triple point analysis. Students evaluate the energetic and molecular transitions of matter in complex environments.

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1. At the critical point of a substance, the distinction between the liquid phase and the gas phase disappears. What is the resulting state called?

A. Bose-Einstein Condensate
B. Supercritical Fluid
C. Amorphous Solid
D. Plasma

2. The specific temperature and pressure where all three phases (solid, liquid, and gas) coexist in thermodynamic equilibrium is known as the _____.

A. Critical Point
B. Triple Point
C. Sublimation Line
D. Eutectic Point

3. True or False: For most substances, an increase in external pressure will raise the melting point, but for water (H2O), it actually lowers it.

A. True
B. False

4. During a phase change, such as boiling, why does the temperature of the substance remain constant despite the continuous addition of heat?

A. The thermometer reaches its thermal limit.
B. The energy is used to increase the kinetic energy of particles.
C. The energy is utilized to overcome intermolecular forces of attraction.
D. Atmospheric pressure absorbs the excess thermal energy.

5. The phase transition from a gas directly to a solid, bypassing the liquid state, is called _____.

A. Sublimation
B. Condensation
C. Deposition
D. Vaporization

6. True or False: According to the Kinetic Molecular Theory, individual gas particles are assumed to have a significant volume and experience strong attractive forces with one another.

A. True
B. False

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7. Which of the following describes the behavior of molecules in a 'viscous' liquid compared to a non-viscous one?

A. The molecules have very weak London dispersion forces.
B. The molecules exhibit high intermolecular friction and resistance to flow.
C. The molecules gain kinetic energy faster when cooled.
D. The liquid has no surface tension.

8. The pressure exerted by a gas in thermodynamic equilibrium with its condensed phases at a given temperature in a closed system is the _____.

A. Partial Pressure
B. Critical Pressure
C. Vapor Pressure
D. Osmotic Pressure

9. If you move a sample of boiling water from sea level to the top of Mount Everest, what happens to the boiling point temperature?

A. It increases because the gravity is lower.
B. It remains 100°C because it is a physical constant.
C. It decreases because the atmospheric pressure is lower.
D. It decreases because the air is colder.

10. True or False: Evaporation is a cooling process because the highest-energy particles escape the liquid, leaving behind particles with lower average kinetic energy.

A. True
B. False