

Chemistry Questions on Liquid State

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Multiple Choice Questions

1. What happens to the melting point of ice when impurities are added?

- a) It increases and ice melts at a higher temperature.
 - b) It remains the same at 0°C.
 - c) It decreases and ice melts at a lower temperature.
 - d) It fluctuates depending on the type of impurity.
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2. What happened when impurities are present?

- a) Impurities make it easier for ice molecules to form a solid.
 - b) Impurities disrupt the crystalline structure of ice.
 - c) Impurities increase the pressure on the ice.
 - d) Impurities raise the temperature at which ice can melt.
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3. When salt is added to ice, what is the effect on its melting point?

- a) Ice melts at a higher temperature.
 - b) Ice melts exactly at 0°C.
 - c) Ice melts at a lower temperature.
 - d) Salt has no effect on the melting point of ice.
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4. What happens to the vapor pressure of a liquid when heat energy is added?

- a) It decreases.
 - b) It increases.
 - c) It remains constant.
 - d) It fluctuates.
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5. What characterizes the process of boiling, as compared to evaporation?

- a) Only surface molecules escape into the vapor phase.
- b) Bubbles of vapor form within the liquid and rise to the surface.
- c) It occurs only at the surface of the liquid.
- d) The temperature of the liquid decreases.



6. What is the boiling point of a liquid?

- a) The temperature at which its vapor pressure equals the applied pressure.
 - b) The temperature at which the liquid condenses.
 - c) The temperature at which the liquid freezes.
 - d) The temperature at which the liquid reaches its maximum density.
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7. What happens to the boiling point of a liquid when the external pressure is reduced?

- a) It increases.
 - b) It remains the same.
 - c) It decreases.
 - d) It fluctuates randomly.
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8. At what pressure is the normal boiling point of water 100°C?

- a) 0.83 atm
 - b) 1.0 atm
 - c) 0.5 atm
 - d) 1.5 atm
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9. What is the heat of vaporization of a substance?

- a) The energy needed to convert a liquid to vapor at its freezing point.
 - b) The energy needed to break the bonds between molecules in a solid.
 - c) The energy needed to convert a liquid at its boiling point to a gas.
 - d) The energy released when vapor condenses into a liquid.
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10. What is the molar heat of vaporization of water at 298 K and 1 atmosphere?

- a) 44.0 J
 - b) 44.0 kJ
 - c) 298 J
 - d) 100 kJ
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11. How are the molar heat of vaporization ($\Delta H_{\text{vaporization}}$) and the molar heat of condensation ($\Delta H_{\text{condensation}}$) related?



- a) They are equal in magnitude but opposite in sign.
 - b) They are equal in magnitude and sign.
 - c) The molar heat of vaporization is greater.
 - d) The molar heat of condensation is greater.
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12. What is the key difference between evaporation and boiling?

- a) Evaporation occurs only at the surface of the liquid, while boiling occurs throughout the liquid.
 - b) Boiling occurs only at the surface of the liquid, while evaporation occurs throughout the liquid.
 - c) Evaporation occurs at higher temperatures, while boiling occurs at lower temperatures.
 - d) There is no difference between evaporation and boiling.
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13. Why does the boiling point of a liquid decrease as altitude increases?

- a) The atmospheric pressure increases, causing the boiling point to rise.
 - b) The atmospheric pressure decreases, causing the boiling point to decrease.
 - c) The temperature increases, which causes the boiling point to decrease.
 - d) The vapor pressure increases, which causes the boiling point to decrease.
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14. Why are some liquids volatile and others are not?

- a) Volatile liquids have strong intermolecular forces.
 - b) Non-volatile liquids evaporate easily at lower temperatures.
 - c) Non-volatile liquids have high vapor pressure.
 - d) Volatile liquids have weak intermolecular forces.
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15. How are the particles in a liquid different from those in a gas?

- a) Particles in a liquid are farther apart than in a gas.
 - b) Particles in a liquid are in constant motion, just like in a gas.
 - c) Particles in a liquid are closer together than in a gas.
 - d) Particles in a liquid move more freely than in a gas.
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16. What causes the attraction between particles in a liquid?

- a) Gravitational forces.
- b) Intermolecular forces such as dipole-dipole, London dispersion, and hydrogen bonding.
- c) Strong nuclear forces.
- d) Electromagnetic forces.



17. Why are liquids more ordered than gases?

- a) Liquids have stronger intermolecular forces and less mobility of particles.
 - b) Liquids have weaker intermolecular forces and greater mobility of particles.
 - c) Liquids have no intermolecular forces, unlike gases.
 - d) Liquids have less ordered structures than gases.
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18. What happens during the process of evaporation?

- a) Molecules on the surface of a liquid break away and enter the gas phase.
 - b) Molecules in the interior of a liquid break away and enter the gas phase.
 - c) Molecules from the gas phase combine to form a liquid.
 - d) Molecules on the surface of a liquid become more tightly bound.
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19. What happens to the rate of evaporation as temperature increases?

- a) It decreases.
 - b) It remains constant.
 - c) It increases.
 - d) It fluctuates randomly.
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20. What is dynamic equilibrium in a closed container during evaporation?

- a) When the rate of evaporation is equal to the rate of condensation.
 - b) When evaporation continues without any condensation.
 - c) When the liquid is completely evaporated.
 - d) When condensation is faster than evaporation.
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21. What is the process called when a vapor returns to the liquid state?

- a) Evaporation
 - b) Vaporization
 - c) Condensation
 - d) Sublimation
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22. What type of liquids are considered volatile?



- a) Liquids with strong intermolecular forces.
 - b) Liquids that do not vaporize easily.
 - c) Liquids with weak intermolecular forces.
 - d) Liquids that evaporate only in closed containers.
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23. What is vapor pressure?

- a) The pressure exerted by the liquid on the container.
 - b) The partial pressure of the vapor in dynamic equilibrium with its liquid.
 - c) The pressure exerted by a gas on the liquid surface.
 - d) The temperature at which a liquid boils.
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24. Which factor affects the rate of evaporation of a liquid?

- a) Temperature
 - b) Surface area of the liquid
 - c) Intermolecular forces
 - d) All of the above
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25. What happens to the vapor pressure of a liquid as the temperature increases?

- a) It decreases.
 - b) It remains constant.
 - c) It increases.
 - d) It fluctuates randomly.
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26. Which of the following liquids would have the highest vapor pressure at room temperature?

- a) Water
 - b) Ethanol
 - c) Diethyl ether
 - d) Motor oil
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27. What is the main reason that non-volatile liquids do not vaporize easily?

- a) They have weak intermolecular forces.
- b) They have strong intermolecular forces.
- c) They have high vapor pressures.
- d) They evaporate quickly at room temperature.



28. What is the effect of increasing the surface area of a liquid on its rate of evaporation?

- a) It decreases the rate of evaporation.
 - b) It has no effect on the rate of evaporation.
 - c) It increases the rate of evaporation.
 - d) It changes the temperature of the liquid.
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29. Which of the following is true about volatile liquids?

- a) They have strong intermolecular forces.
 - b) They evaporate easily at room temperature.
 - c) They have low vapor pressures.
 - d) They do not evaporate.
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30. Which of the following is NOT a factor that affects the rate of evaporation?

- a) Temperature
 - b) Intermolecular forces
 - c) Surface area
 - d) Color of the liquid
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31. What is the main characteristic of a liquid that evaporates in an open container until it disappears?

- a) It cannot establish equilibrium.
 - b) It has high intermolecular forces and vaporizes slowly.
 - c) It reaches dynamic equilibrium quickly.
 - d) It is non-volatile and does not evaporate.
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32. What causes liquids with stronger intermolecular forces to have lower vapor pressures?

- a) More molecules have enough kinetic energy to escape the liquid.
 - b) Fewer molecules have enough kinetic energy to escape the liquid.
 - c) The liquid heats up more quickly.
 - d) The vapor pressure remains constant regardless of temperature.
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