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Question 1

The rubbing alcohol sold in drug stores often is composed of 70% isopropyl alcohol and 30% water. In this solution

- isopropyl alcohol is the solvent
- water is the solvent
- both water and isopropyl alcohol are solvents
- neither water nor isopropyl alcohol is a solvent

Question 2

Molecules of a liquid can pass into the vapor phase only if the

- liquid has little surface tension
- molecules have sufficient kinetic energy to overcome the intermolecular forces in the liquid
- temperature of the liquid is near its boiling point
- vapor pressure of the liquid is high

Question 3

For a liquid solution made by dissolving a solid or a gas in a liquid, the

- liquid is the solute
- liquid is the solvent
- solute is the component present in the greatest amount
- solvent is the component present in the greatest amount

Question 4

Which covalent bond is the most polar?

- N-F
- C-F
- Cl-F
- F-F

Question 5

The wavelength of light used to observe an object must be _____ than the object itself.

- Larger
- Smaller
- of higher energy
- of lower energy

Question 6

Which transition could occur if a solid is heated at a pressure above the triple point pressure?

- Condensation
- Deposition
- Melting
- Sublimation

Question 7

When a liquid is heated at its boiling point, the

- covalent bonds are broken, allowing vaporization to occur
- temperature of the liquid increases
- temperature of the liquid remains the same as long as any liquid is present
- temperature of the vapor phase increases

Question 8 (This is same question as #7)

When a liquid is heated at its boiling point, the
covalent bonds are broken, allowing vaporization to occur
temperature of the liquid increases
temperature of the liquid remains the same as long as any liquid is present
temperature of the vapor phase increases

Question 9

Which type of bonding does Ba form upon solidification?
covalent network
ionic
metallic
Molecular

Question 10

Which of the following forms a molecular solid?
CaO
C₁₀H₂₂
C(graphite)
gold

Question 11

Which of the following solutions will have the lowest freezing point?
0.010 m Rb I
0.010 m K₂SeO₄
0.035 m CH₃OH
0.015 m SrBr₂

Question 12

How many liters of SO₃(g) are produced at 25°C and 1.00 atm from the combustion of 1.00 kg of coal which is 1.00% S by weight? Assume all the sulfur in the coal ends up as SO₃.
0.640 L
5.08 L
7.63 L
11.4 L

Question 13

If the Earth's ozone (O₃) layer has a total volume of 1.00 × 10²⁰ km³, a partial pressure of 1.6 × 10⁻⁹ atm, and a average temperature of 230K, how many ozone molecules are in the Earth's ozone layer?
2.3 × 10³⁵ molecules
5.1 × 10³⁵ molecules
2.3 × 10⁴⁵ molecules
5.1 × 10⁴⁵ molecules

Question 14

An unknown gas contains 83% C and 17% H by mass. It effuses at 0.87 times the rate of CO₂ gas under the same conditions. What is the molecular formula of the unknown gas?
C₂H₅
C₃H₃
C₄H₁₀
C₇H₁₇

Question 15

A saturated solution is defined as

- a concentrated solution
- a solution that is in equilibrium with pure solvent
- a solution than is in equilibrium with undissolved solute
- a solution that is in equilibrium with both pure solvent and undissolved solute

Question 16

A 75.0 L steel tank at 20.0°C contains acetylene gas, C₂H₂, at a pressure of 1.39 atm. Assuming ideal behavior, how many grams of acetylene are in the tank?

- 4.33 g
- 6.01 g
- 113 g
- 1650 g

Question 17

According to the kinetic molecular theory, the pressure of a gas in a container will decrease if the

- number of collisions with the container wall increases
- number of moles of the gas increases
- temperature of the gas decreases
- volume of the container decreases