

I-Base your answers on the Phase Diagram for a typical substance shown above: (15 points)

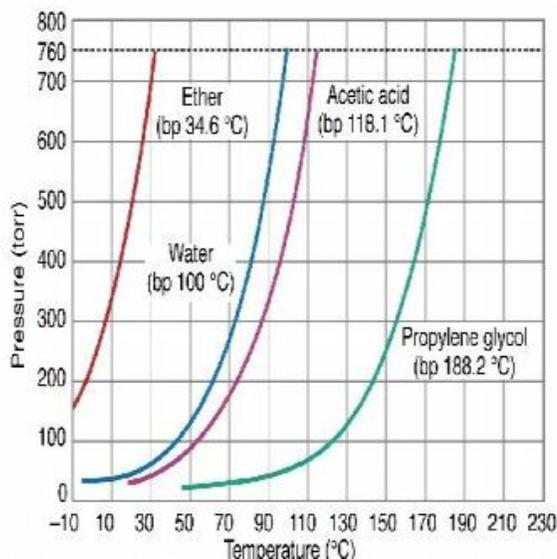
Identify the following by letter on the diagram: 1-The triple point _____ 2-The critical point _____

What change in phase (if any) will occur when going from G to F? _____

What change in phase (if any) will occur when going from F to E? _____

What change in phase (if any) will occur when going from H to I? _____

II-The diagram shows the **Vapor Pressure** of several liquids at various temperatures. .



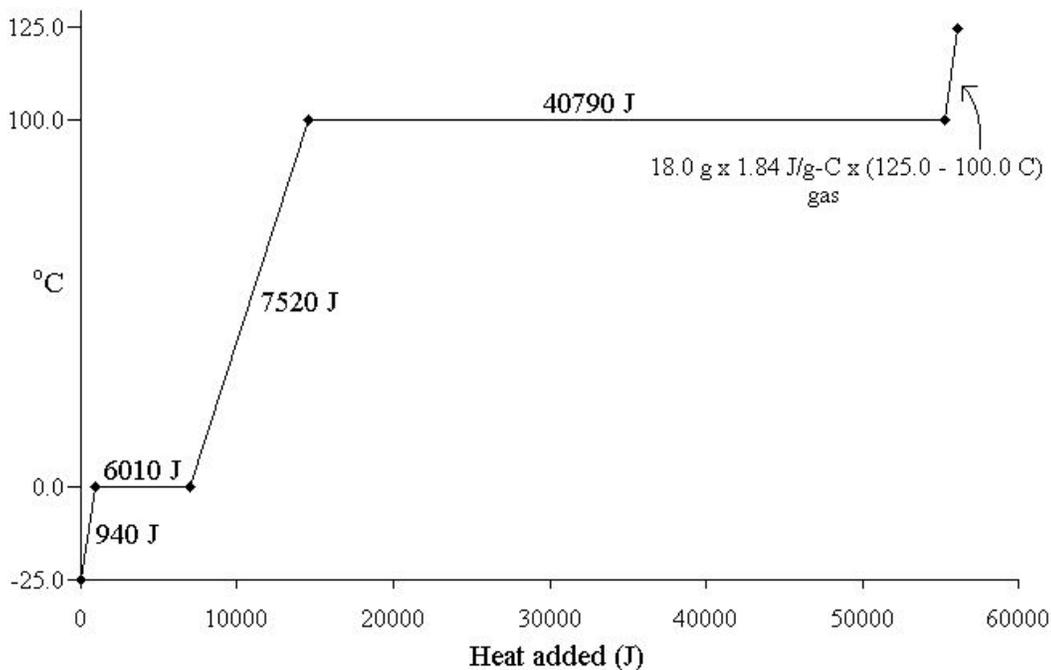
(9 points)

1-Which liquid has the weakest intermolecular forces?

2-What is boiling point of Ether at an external pressure of 700 torr?

3-The numbers printed in parentheses for each liquid are **normal** boiling points. What will happen to the boiling points if the external pressure is raised to 800 torr? They will... 1) increase 2) decrease 3) not change

(over)



III- The Diagram Shows The Heating Curve for **18.0g (1.00 mole)** of Ice

1-List the values of the molar heats of fusion and vaporization in that order. (3pts.)

2-Using the formula $q = mc\Delta t$ and graph data, calculate the value of the specific heat of *ice* in J/g (°C) (3pts.)

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Multiple Choice questions (3 points each--circle correct choice)

1) The solubility of oxygen gas in water at 25 °C and 1.0 atm pressure of oxygen is 0.041 g/L The solubility of oxygen in water at 3.0 atm and 25 °C is _____ g/L. A) 0.041 B) 0.014 C) 0.31 D) 0.12 E) 3.0

2) The process of solute particles being surrounded by solvent particles is known as _____.
A) saturation B) unsaturation C) solvation D) agglutination E) dehydration

3) During the dissolving of solid sugar in water the entropy of the sample...
a) increases b) doesn't change c) decreases

4) The concentration of urea in a solution prepared by dissolving 16 g of urea in 39 g of H₂O is _____% urea by mass. A) 29 B) 41 C) 0.29 D) 0.41 E) 0.48

5) The mole fraction of urea (MW = 60.0 g/mol) in a solution prepared by dissolving 16 g of urea in 39 g of H₂O (MW = 18.0 g/mol) is _____. A) 0.58 B) 0.37 C) 0.13 D) 0.11 E) 9.1