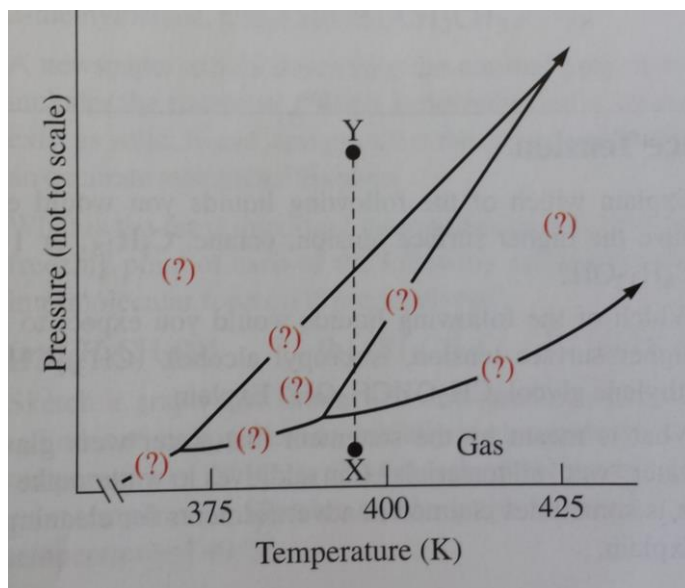


1. How much heat, in KJ, is required to vaporize 3.539 Kg of octane, C_8H_{18} ? ($\Delta H_{\text{vap}} C_8H_{18} = 41.5$ KJ/mol) (Ans: 1280KJ)

2. The figure below is a portion of a phase diagram for sulfur. The stable form of solid sulfur at room temperature is rhombic sulfur S_α ; at the normal melting point, it is monoclinic sulfur, S_β ;
- Indicate the phases present in the portion of the graph marked (?);
 - Identify the triple point and indicate the phases at the equilibriums of each one;
 - Describe the phase changes that occur as the pressure of a sample is raised at constant temperature from point X to point Y.



For the following questions – indicate which intermolecular force is responsible for your choice.

- A) London forces
- B) dipole-dipole interactions
- C) Hydrogen bonding
- D) ion-dipole interactions
- E) Ionic forces

3. What intermolecular force will be found in the following compounds? Also indicate if the compound will be solid (s), liquid (l) or gas (g).

CO ₂		KCl	
NH ₃		CH ₃ CH ₂ CH ₂ CH ₂ CH ₃	
C ₆ H ₅ COOH		H ₂ O	

4. Circle the compound with a higher:

Melting or boiling point	Compounds	Intermolecular force
Boiling point	CH ₃ CH ₂ CH ₂ CH ₂ OH or CH ₃ CH ₂ CH ₂ CH ₃	
Boiling point	Phosphorous pentabromide or carbon tetrafluoride	
Melting point	Sulfur hexafluoride or carbon tetraiodide	
Boiling point	CH ₃ CH ₂ CH ₂ CH ₂ CH ₃ or CH ₃ CH ₂ OCH ₂ CH ₃	

5. Which of the following solvents would you choose to dissolve the compounds given in the table below?

H₂O: water

CH₃CH₂CH₂CH₂CH₃: pentane

CH₃CH₂OH: ethanol

Substance	Solvent	Intermolecular force
CH ₄		
C ₆ H ₅ COOH		
CaCO ₃		

6. Arrange the following in increasing melting point.

NaOH, CH₃OH, C₆H₅OH, CH₃CH₃