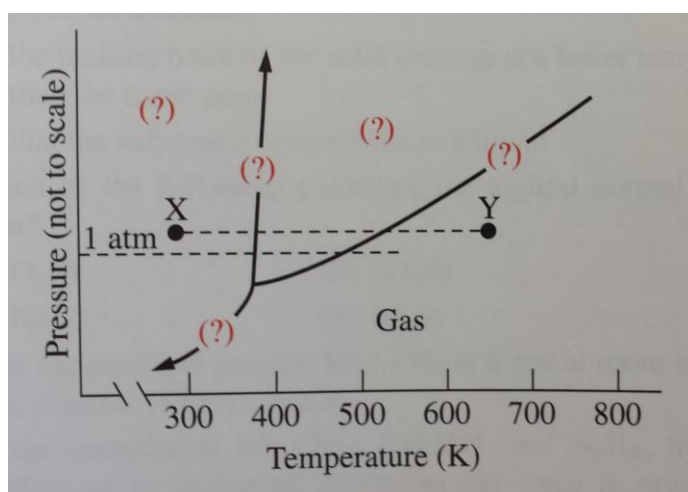


- 1) How much heat, in KJ is required to convert 79.8 g water from liquid at 11.3 °C to vapor at 25.0 °C? ( $\Delta H_{\text{vap}} \text{H}_2\text{O} = 44.0 \text{ KJ/mol}$ ) (Ans: 199KJ)

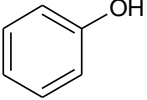
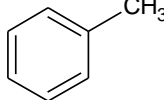
- 2) The figure below is a phase diagram for iodine. A) indicate the phases present in the portions of the diagrams marked (?); b) use the letters A, B, C and D to represent the triple point, the normal melting point, the normal boiling point, and the critical point, respectively; c) describe the phase changes that occur as the temperature of a sample is raised, at constant pressure, from point X to point Y.



Use the following intermolecular forces to answer the following questions.

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

3) Which of the above forces do you expect in the following molecules?

			
$\text{CH}_3\text{CH}_2\text{F}$		$\text{CaCO}_3$	
$\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$		$\text{CH}_3\text{OH}$	

4) Circle the compound in the following pairs that has a higher boiling point? Which intermolecular force is responsible for the higher value?

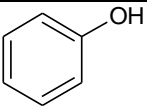
$\text{CO}_2$ or $\text{OCS}$	$\text{SeO}_2$ or $\text{SO}_2$	$\text{CH}_3\text{CH}_3$ or $\text{H}_2\text{CO}$
$\text{CH}_3\text{CH}_2\text{OH}$ or $\text{CH}_3\text{OCH}_3$	$\text{NaCl}$ or $\text{H}_2\text{O}$	Ne or Kr

5) For the compounds in the table chose the solvent it will be soluble in the solvents given below. Give the major intermolecular force responsible for the solubility.

Methanol:  $\text{CH}_3\text{OH}$

Water:  $\text{H}_2\text{O}$

Hexane:  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$

Substance	Solvent	Intermolecular force
$\text{CO}_2$		
		
$\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$		

6) Arrange the following in increasing melting point.  
 $\text{H}_2\text{O}$ ,  $\text{NH}_3$ ,  $\text{CH}_4$ ,  $\text{LiOH}$