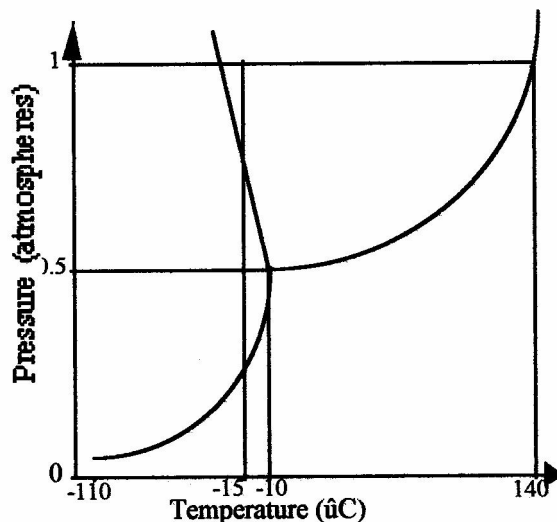


REVIEW QUESTIONS

Chapter 11

1. Use the phase diagram above to answer the following questions:



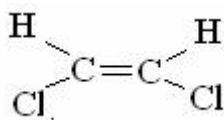
- A) What is the normal boiling point of the substance above? _____
- B) What are the critical pressure and the critical temperatures for this substance?

$T_c =$ _____

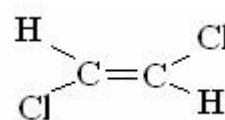
$P_c =$ _____

- C) What phase change occurs when the temperature of a sample of this substance is increased from -20°C to 20°C at 0.3 atm pressure?
- D) What phase change occurs when the pressure of a sample of this substance is increased from 0.4 atm to 0.8 atm at 0°C ?

5. Shown below are the two isomers of 1,2-dichloroethene and their respective boiling points:



cis isomer
60.3



trans isomer
47.5

B.p. (°C)

Give an explanation for the larger boiling point of the cis isomer.

6. Trimethylamine, $(\text{CH}_3)_3\text{N}$ and propylamine $\text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2$, have fishy, ammonia-like odors. Explain why propylamine has a lower vapor pressure than trimethylamine.

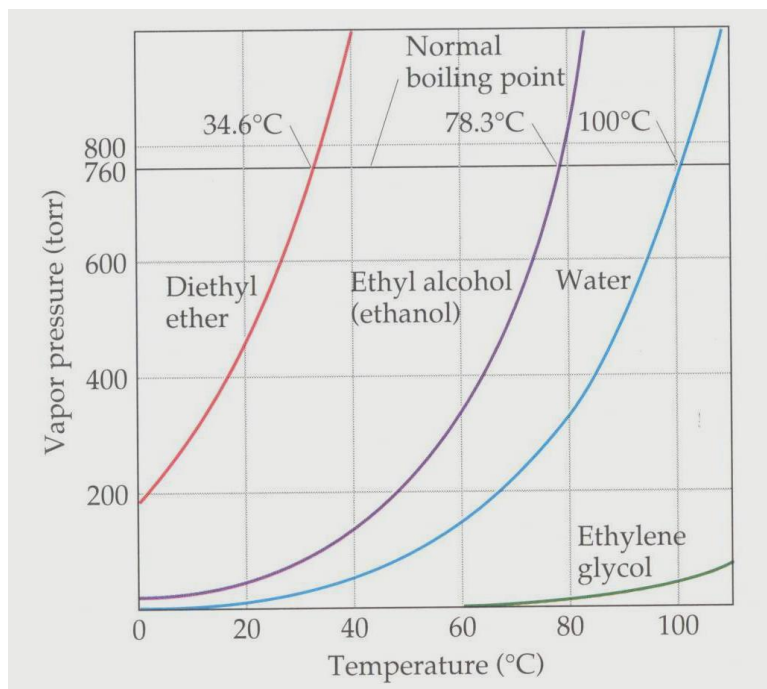
7. For each pair of substances shown below, predict which would have the higher melting point and indicate why:

a) KBr and Br_2

b) SiO_2 and CO_2

c) NaF and MgF_2

8. Use the graph below to answer the following questions:



- What is the boiling point of ethyl alcohol at 300 torr?
- At what pressure will diethyl ether boil at 20°C?
- Which liquid is least volatile? Which is most volatile?