

AP MULTIPLE CHOICE QUESTIONS
CH. 11, SET 2

1989

21. Which of the following is true at the triple point of a pure substance?
- (A) The vapor pressure of the solid phase always equals the vapor pressure of the liquid phase.
 (B) The temperature is always 0.01K lower than the normal melting point.
 (C) The liquid and gas phases of the substance always have the same density and are therefore indistinguishable.
 (D) The solid phase always melts if the pressure increases at constant temperature.
 (E) The liquid phase always vaporizes if the pressure increases at constant temperature.

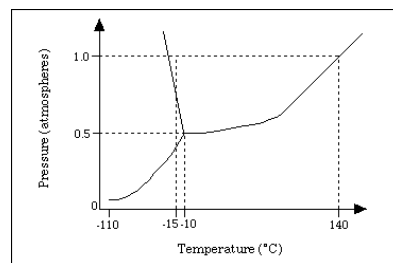
31. The structural isomers C_2H_5OH and CH_3OCH_3 be expected to have the same values for which of the following? (Assume ideal behavior)
- (A) Gaseous densities at the same temperature and pressure.
 (B) Vapor pressures at the same temperature.
 (C) Boiling points.
 (D) Melting points.
 (E) Heats of vaporization.

1994

32. CH_3CH_2OH boils at $78^\circ C$ and CH_3OCH_3 boils at $-24^\circ C$, although both compounds have the same composition. This difference in boiling points may be attributed to a difference in
- (A) molecular mass (D) hydrogen bonding
 (B) density (E) heat of combustion
 (C) specific heat

34. $X = CH_3CH_2CH_2CH_2CH_3$
 $Y = CH_3CH_2CH_2CH_2OH$
 $Z = HOCH_2CH_2CH_2OH$
- Based on concepts of polarity and hydrogen bonding, which of the following sequences correctly lists the compounds above in the order of their increasing solubility in water?
- (A) $Z < Y < X$ (D) $X < Z < Y$
 (B) $Y < Z < X$ (E) $X < Y < Z$
 (C) $Y < X < Z$

1989



49. The normal boiling point of the substance represented by the phase diagram above is
- (A) $-15^\circ C$ (D) $> 140^\circ C$
 (B) $-10^\circ C$ (E) not determinable from the diagram.
 (C) $140^\circ C$
51. For the substances represented in the above diagram, which of the phases is most dense and which is the least dense at $-15^\circ C$?
- | | Most Dense | Least Dense |
|-----|---|-------------|
| (A) | solid | gas |
| (B) | solid | liquid |
| (C) | liquid | solid |
| (D) | liquid | gas |
| (E) | The diagram gives no information about densities. | |

68. Which of the following molecules has a dipole moment of zero?
- (A) C_6H_6 (benzene) (D) NH_3
 (B) NO (E) H_2S
 (C) SO_2

1999

- Qs 13 – 16 refer to the following descriptions of bonding in different types of solids.
- (A) Lattice of positive and negative ions held together by electrostatic forces.
 (B) Closely packed lattice with delocalized electrons throughout.
 (C) Strong single covalent bonds with weak intermolecular forces.
 (D) Strong multiple covalent bonds (including pi bonds) with weak intermolecular forces.
 (E) Macromolecules held together with strong polar bonds.
13. cesium chloride, $CsCl$ (s)
 14. gold, Au (s)
 15. carbon dioxide, CO_2 (s)
 16. methane, CH_4 (s)