

AP MULTIPLE CHOICE QUESTIONS  
CH. 11, SET 3

1999

28. The melting point of MgO is higher than that of NaF. Explanations for this observation include which of the following?

I.  $\text{Mg}^{2+}$  is more positively charged than  $\text{Na}^+$ .  
II.  $\text{O}^{2-}$  is more negatively charged than  $\text{F}^-$ .  
III. The  $\text{O}^{2-}$  ion is smaller than the  $\text{F}^-$  ion.

- (A) II only (D) II and III only  
(B) I and II only (E) I, II, and III  
(C) I and III only

32. Types of hybridization exhibited by the C atoms in propene,  $\text{CH}_3\text{CHCH}_2$ , include which of the following?

I. sp  
II.  $\text{sp}^2$   
III.  $\text{sp}^3$

- (A) I only (D) II and III only  
(B) III only (E) I, II, and III  
(C) I and II only

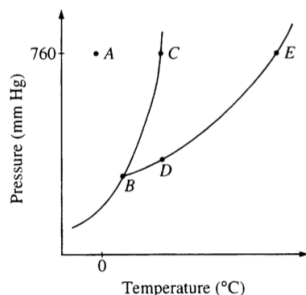
68. In which of the following processes are covalent bonds broken?

(A)  $\text{I}_2(\text{s}) \rightarrow \text{I}_2(\text{g})$   
(B)  $\text{CO}_2(\text{s}) \rightarrow \text{CO}_2(\text{g})$   
(C)  $\text{NaCl}(\text{s}) \rightarrow \text{NaCl}(\text{l})$   
(D)  $\text{C}(\text{diamond}) \rightarrow \text{C}(\text{gas})$   
(E)  $\text{Fe}(\text{s}) \rightarrow \text{Fe}(\text{l})$

1994

45. A sample of an ideal gas is cooled from  $50.0^\circ\text{C}$  to  $25.0^\circ\text{C}$  in a sealed container of constant volume. Which of the following values for the gas will decrease?

I. The average molecular mass of the gas  
II. The average distance between molecules  
III. The average speed of the molecules  
(A) I only (D) I and III  
(B) II only (E) II and III  
(C) III only



39. The phase diagram for a pure substance is shown above. Which point on the diagram corresponds to the equilibrium between the solid and liquid phases at the normal melting point?

- (A) A (D) D  
(B) B (E) E  
(C) C

58. On a mountaintop, it is observed that water boils at  $90^\circ\text{C}$ , not at  $100^\circ\text{C}$  as at sea level. This phenomenon occurs because on the mountain top the

(A) equilibrium water vapor pressure is higher due to the higher atmospheric pressure.  
(B) equilibrium water vapor pressure is lower due to the higher atmospheric pressure.  
(C) equilibrium water vapor pressure equals the atmospheric pressure at lower temperature.  
(D) water molecules have a higher average kinetic energy due to the lower atmospheric pressure.  
(E) water contains a greater concentration of dissolved gases.