Competitive Edge – IIT Chemistry

First Edition

By

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Physical Chemistry

States of Matter

Single-Answer MCQ

1. At constant volume, for a fixed number of mole of a gas, the pressure of the gas increases with rise of temperature due to :

   (1) increase in average molecular speed

   (2) increase in number of moles

   (3) increase in molecular attraction

   (4) decrease in mean free path **[1992]**

2. The compressibility factor of a gas is defined as Z = PV/nRT. The compressibility factor of an ideal gas is :

   (1) Zero (2) infinite

   (3) 1 (4) -1 **[1996]**

3. A gas will approach ideal behaviour at :

   (1) low T and high P (2) low T and low P

   (3) high T and low P (4) high T and high P **[1999]**

4. The root mean square velocity of an ideal gas at constant pressure varies with density (d) as :

   (1) d^2 (2) d

   (3) $\sqrt{d}$ (4) $\sqrt{1/d}$ **[2001]**

5. Positive deviation from ideal behaviour takes place because of :

   (1) molecular interaction between atoms and PV/nRT > 1

   (2) molecular interaction between atoms and PV/nRT < 1

   (3) finite size of atoms and PV/nRT > 1

   (4) finite size of atoms and PV/nRT < 1 **[2003]**

6. For 1 mole of gas, the average kinetic energy is given as E. The u_{rms} of gas is :

   (1) $\left[\frac{2E}{M}\right]^{1/2}$ (2) $\left[\frac{3E}{M}\right]^{1/2}$

(3) $\left[\frac{2E}{3M}\right]^{1/2}$ (4) $\left[\frac{3E}{2M}\right]^{1/2}$ **[2004]**