

Previous year JEE question 8

Calculate the root mean square velocity of ozone kept in a closed vessel at 20°C and 82 cm mercury pressure.

(1985 - 2 Marks)

$$U_{\text{rms}} = \sqrt{\frac{3RT}{M}}$$

$$\text{Given } T = 20^{\circ}\text{C} = 20 + 273 = 293\text{K}$$

$$R = 8.314 \times 10^7 \text{ erg per degree per mol}$$

$$M(\text{of O}_3) = 48$$

$$\therefore U_{\text{rms}} = \sqrt{\frac{3 \times 8.314 \times 10^7 \times 293}{48}} = 3.9 \times 10^4 \text{ cm sec}^{-1}$$