

11) How long does it take a hemoglobin molecule to diffuse 1.00 cm in water? Given diffusion constant $D = 6.9 \times 10^{-11} \text{ m}^2/\text{s}$

$$x_{\text{rms}} = \sqrt{2Dt} \quad t = \frac{x_{\text{rms}}^2}{2D} = \frac{(0.01 \text{ m})^2}{2 \times 6.9 \times 10^{-11} \text{ m}^2/\text{s}} = 7.25 \times 10^5 \text{ s} \approx 8.4 \text{ days}$$

(A)