

PYQSide



NEET KINETIC THEORY — RMS, AVERAGE AND MOST PROBABLE SPEEDS — PYQS

Max. Marks: 20

Questions: 5

Section A (MCQ) — 5 questions

Q.1 A flask contains argon and chlorine in the ratio of 2 : 1 by mass. The temperature of the mixture is 27°C . The ratio of root mean square speed of the molecules of the two gases $\left(\frac{V_{\text{rms}}^{\text{Ar}}}{V_{\text{rms}}^{\text{Cl}}}\right)$ is :

(Atomic mass of argon = 40.0 u and molecular mass of chlorine = 70.0 u) [NEET (UG) 2026]

- (1) $\frac{7}{4}$ (2) $\frac{2}{\sqrt{7}}$ (3) $\frac{\sqrt{7}}{2}$ (4) $\frac{7}{2}$

Scan or tap for the full solution



Q.2 The temperature of a gas is -50°C . To what temperature the gas should be heated so that the rms speed is increased by 3 times? [NEET (UG) 2023]

- (1) 3295°C (2) 3097 K (3) 223 K (4) 669°C

Scan or tap for the full solution



Q.3 Three vessels of equal capacity have gases at the same temperature and pressure. The first vessel contains helium (monoatomic), the second contains fluorine (diatomic) and the third contains sulfur hexafluoride (polyatomic). The correct statement, among the following is : [NEET (UG) 2022 (Phase 2)]

- (1) The root mean square speed of sulfur hexafluoride is the largest
(2) All vessels contain unequal number of respective molecules
(3) The root mean square speed of molecules is same in all three cases
(4) The root mean square speed of helium is the largest

Scan or tap for the full solution



Q.4 At what temperature will the rms speed of oxygen molecules become just sufficient for escaping from the Earth's atmosphere?

(Given : Mass of oxygen molecule (m) = 2.76×10^{-26} kg, Boltzmann's constant $k_B = 1.38 \times 10^{-23} \text{ J K}^{-1}$) [NEET 2018]

- (1) $2.508 \times 10^4 \text{ K}$ (2) $8.360 \times 10^4 \text{ K}$
(3) $5.016 \times 10^4 \text{ K}$ (4) $1.254 \times 10^4 \text{ K}$

Scan or tap for the full solution



Q.5 The molecules of a given mass of a gas have r.m.s. velocity of 200 m s^{-1} at 27°C and $1.0 \times 10^5 \text{ N m}^{-2}$ pressure. When the temperature and pressure of the gas are respectively, 127°C and $0.05 \times 10^5 \text{ N m}^{-2}$, the r.m.s. velocity of its molecules in m s^{-1} is

[NEET 2016 (Phase 1)]

- (1) $\frac{100\sqrt{2}}{3}$ (2) $\frac{100}{3}$
(3) $100\sqrt{2}$ (4) $\frac{400}{\sqrt{3}}$

Scan or tap for the full solution



ANSWER KEY

Ques.	1	2	3	4	5						
Ans.	3	1	4	2	4						