

NAT I Medical Physics

Sr	Questions	Answers Choice
1	When a Na ion and a Cl ion are placed in air a force F acts between them when they are separated by a distance of 1 cm from each other the permittivity of air and the dielectric constant of water are ϵ_0 and K respectively When a piece of salt is placed in water then the force between Na^+ and Cl^- ions separated by a distance of 1 cm will be	A. F B. FK/ϵ_0 C. $F/K\epsilon_0$ D. F/K
2	Two point charges placed at distance of 20 cm in air repel each other with a certain force. When a dielectric slab of thickness 8 cm and dielectric constant K is introduced between these point charges force of interaction becomes half of its previous value Then K is approximately.	A. 2 B. 4 C. $\sqrt{2}$ D. 1
3	A point charge Q is placed at the mid-point of a line joining two charges $4q$ and q . if the net force on charge q is zero. then Q must be equal to	A. $-q$ B. $+q$ C. $-2q$ D. $+4q$
4	In a Millikan's oil drop experiment the charge on an oil drop is calculated to be 6.35×10^{-19} C. The number of excess electrons on the drop is	A. 3.9 B. 4 C. 4.2 D. 6
5	Two point charge $+3\mu\text{C}$ and $+8\mu\text{C}$ repel each other with a force of 40 N. if a charge of $-5\mu\text{C}$ is added to each of them then the force between will become	A. -10N B. $+10\text{N}$ C. $+20\text{N}$ D. -20N
6	What is the average energy of N molecules of monoatomic gas?	A. $\frac{1}{2} NkT$ B. NkT C. $\frac{3}{2} NkT$ D. $\frac{5}{2} NkT$
7	What is the ratio of r.m.s velocity for O_2 to H_2 ?	A. $\frac{1}{4}$ B. 4 C. $\sqrt{4} : 1$ D. $1 : \sqrt{4}$
8	At 0°K which of the following properties of a gas will be zero?	A. Kinetic energy B. Potential energy C. Vibrational energy D. Density