

NAT I Engineering 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
9	The product of the pressure and volume of an ideal gas is	A. A constant B. Approximately equal to the universal gas constant C. Directly Proportional to its temperature D. Inversely proportional to its temperature
10	Boyle's law is applicable in	A. Isochoric process B. Isothermal process C. Isobaric process D. Isotonic process