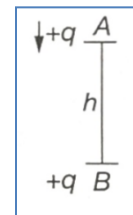


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JEE (Course)

1. A point charge $+q$ is fixed at point B. Another point charge $+q$ at A of mass m vertically above B at height h is dropped from rest. Choose the correct statement:



(a) It will collide with B

(b) It will execute SHM

(c) It will go down only if $\frac{q^2}{4\pi\epsilon_0} < mgh^2$

(d) It will go down up to a point and then come up

2. The ratio of the forces between two small spheres with same charges when they are in air to when they are in a medium of dielectric constant K is

(a) $1 : K$

(b) $K : 1$

(c) $1 : K^2$

(d) $K^2 : 1$

3. A charge Q is divided into two parts of magnitude q and $Q-q$. If the coulomb repulsion between them when they are separated at

some distance is to be maximum, the ratio of $\frac{Q}{q}$ should be

(a) 2

(b) $1/2$

(c) 4

(d) $1/4$

4. There are two charges $+1 \mu\text{C}$ and $+5 \mu\text{C}$. The ratio of the forces acting on them will be

(a) $1 : 5$

(b) $1 : 1$

(c) $5 : 1$

(d) $1 : 25$

5. Coulomb's law is applicable to,

(a) Point charges

(b) Spherical charges

(c) Like charges

(d) All of these

6. A charge q is placed at the centre of the line joining two equal charges Q . The system of the three charges will be in equilibrium if q is equal to

(a) $-(Q/4)$

(b) $-(Q/2)$

(c) $(Q/2)$

(d) $(Q/4)$

7. A body has a charge of one coulomb. The number of excess (or lesser) electrons on it from its normal state will be

(a) ∞

(b) 1.6×10^{-19}

(c) 1.6×10^{19}

(d) 6.25×10^{18}

8. If a charge q is placed at the centre of the line joining two equal charges Q such that the system is in equilibrium, then the value of q is [2002]

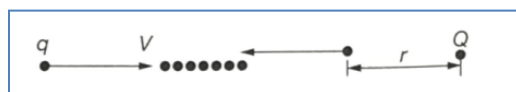
(a) $Q/2$

(b) $-Q/2$

(c) $Q/4$

(d) $-Q/4$

9. A charged particle q is shot towards another charged particle Q which is fixed, with a speed v . It approaches Q up to a closest distance r and then returns. If q was given a speed $2v$, the closest distance of approach would be [2004]



(a) r

(b) $2r$

(c) $r/2$

(d) $r/4$

10. Four charges equal to $-Q$ are placed at the four corners of a square and a charge q is at its centre. If the system is in equilibrium, the value of q is [2004]

(a) $-\frac{Q}{4}(1+2\sqrt{2})$

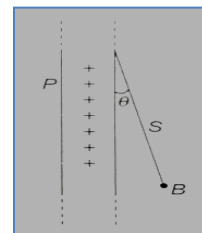
(b) $\frac{Q}{4}(1+2\sqrt{2})$

(c) $-\frac{Q}{2}(1+2\sqrt{2})$

(d) $\frac{Q}{2}(1+2\sqrt{2})$

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- [2005]



- [2005]

- [2009]

- [2010]

- [2011]

- (a) $+Q/2$ (b) $-Q/4$ (c) $-Q/2$ (d) $+Q/4$

[illegible]