

NEET ELECTRIC CHARGES AND FIELDS — COULOMB'S LAW — PYQS

Max. Marks: 36

Questions: 9

Section A (MCQ) — 9 questions

- Q.1** Two identical charged conducting spheres A and B have their centres separated by a certain distance. Charge on each sphere is q and the force of repulsion between them is F . A third identical uncharged conducting sphere is brought in contact with sphere A first and then with B and finally removed from both. New force of repulsion between spheres A and B (Radii of A and B are negligible compared to the distance of separation so that for calculating force between them they can be considered as point charges) is best given as:

[NEET (UG) 2025]

- (1) $\frac{F}{2}$ (2) $\frac{3F}{8}$ (3) $\frac{3F}{5}$ (4) $\frac{2F}{3}$

 Scan or tap for the
full solution


- Q.2** The ratio of Coulomb's electrostatic force to the gravitational force between an electron and a proton separated by some distance is 2.4×10^{39} . The ratio of the proportionality constant, $K = \frac{1}{4\pi\epsilon_0}$ to the gravitational constant G is nearly (Given that the charge of the proton and electron each $= 1.6 \times 10^{-19}$ C, the mass of the electron $= 9.11 \times 10^{-31}$ kg, the mass of the proton $= 1.67 \times 10^{-27}$ kg):
- [NEET (UG) 2022 (Phase 2)]
- (1) 10 (2) 10^{20} (3) 10^{30} (4) 10^{40}

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- Q.3** Two point charges A and B, having charges $+Q$ and $-Q$ respectively, are placed at certain distance apart and force acting between them is F . If 25% charge of A is transferred to B, then force between the charges becomes:
- [NEET (UG) 2019]

- (1) F (2) $\frac{16F}{9}$ (3) $\frac{9F}{16}$ (4) $\frac{4F}{3}$

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- Q.4** Suppose the charge of a proton and an electron differ slightly. One of them is $-e$, the other is $(e + \Delta e)$. If the net of electrostatic force and gravitational force between two hydrogen atoms placed at a distance d (much greater than atomic size) apart is zero, then Δe is of the order of
- [Given : mass of hydrogen $m_h = 1.67 \times 10^{-27}$ kg]

[NEET 2017]

- (1) 10^{-23} C (2) 10^{-37} C (3) 10^{-47} C (4) 10^{-20} C

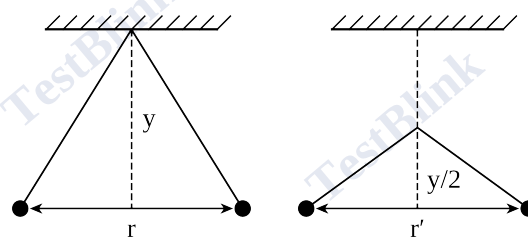
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full solution


- Q.5** Two identical charged spheres suspended from a common point by two massless strings of lengths l , are initially at a distance d ($d \ll l$) apart because of their mutual repulsion. The charges begin to leak from both the spheres at a constant rate. As a result, the spheres approach each other with a velocity v . Then v varies as a function of the distance x between the spheres, as
- [NEET 2016 (Phase 1)]

- (1) $v \propto x^{-1/2}$ (2) $v \propto x^{-1}$ (3) $v \propto x^{1/2}$ (4) $v \propto x$

 Scan or tap for the
full solution


- Q.6** Two pith balls carrying equal charges are suspended from a common point by strings of equal length, the equilibrium separation between them is r . Now the strings are rigidly clamped at half the height. The equilibrium separation between the balls now becomes
- [NEET 2013]



- (1) $\left(\frac{2r}{\sqrt{3}}\right)$ (2) $\left(\frac{2r}{3}\right)$
 (3) $\left(\frac{1}{\sqrt{2}}\right)^2 r$ (4) $\left(\frac{r}{\sqrt[3]{2}}\right)$

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full solution


- Q.7** Two positive ions, each carrying a charge q , are separated by a distance d . If F is the force of repulsion between the ions, the number of electrons missing from each ion will be (e being the charge on an electron) [AIPMT 2010 (Prelims)]

(1) $\frac{4\pi\epsilon_0 F d^2}{e^2}$ (2) $\sqrt{\frac{4\pi\epsilon_0 F e^2}{d^2}}$
 (3) $\sqrt{\frac{4\pi\epsilon_0 F d^2}{e^2}}$ (4) $\frac{4\pi\epsilon_0 F d^2}{q^2}$

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- Q.8** The unit of permittivity of free space, ϵ_0 , is [AIPMT 2004]

- (1) coulomb/newton-metre
 (2) newton-metre²/coulomb²
 (3) coulomb²/newton-metre²
 (4) coulomb²/(newton-metre)²

Scan or tap for the full solution



- Q.9** An electron is moving round the nucleus of a hydrogen atom in a circular orbit of radius r . The Coulomb force $\vec{F}$ between the two is [AIPMT 2003]

(1) $K\frac{e^2}{r^2}\hat{r}$ (2) $-K\frac{e^2}{r^3}\hat{r}$ (3) $K\frac{e^2}{r^3}\hat{r}$ (4) $-K\frac{e^2}{r^2}\hat{r}$

Scan or tap for the full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9		
Ans.	2	2	3	2	1	4	3	3	4		