Class 12 Physics · Chapter 1: Electric Charges and Fields

Worksheet · 20 marks · about 40 minutes · based on NCERT

Name _____ Class and section _____ Date _____

Scan for the free Class 12 Physics test

1. Two equal point charges 10 cm apart in vacuum repel each other with a force of 0.9 N. (Take $1/4\pi\varepsilon_0 = 9 \times 10^9$ N m^2 C^{-2}.) The magnitude of each charge is [1]

(a) 0.10 μC (b) 10 μC
(c) 1.0 μC (d) 3.2 μC

2. Four small bodies inside an insulated box carry charges +4 μC, −7 μC, +2 μC and −1 μC. The total charge of the system is [1]

(a) −6 μC (b) 2 μC
(c) 14 μC (d) −2 μC

3. A glass rod is rubbed with a silk cloth and the rod becomes positively charged. During the rubbing [1]

(a) electrons move from the rod to the silk (b) protons move from the silk to the rod
(c) electrons move from the silk to the rod (d) positive charge is created on the rod and destroyed on the silk

4. Two identical small conducting spheres carry +12 μC and −4 μC and attract each other with a force F when their centres are r apart. They are made to touch and are then put back r apart. The force between them now is [1]

(a) F/3, repulsive (b) F/3, attractive
(c) 4F/3, repulsive (d) F/12, repulsive

5. Point charges +2 μC and +8 μC are fixed 12 cm apart in vacuum. A third charge placed on the line between them feels no net force. Its distance from the +2 μC charge is [1]

(a) 2.4 cm (b) 8 cm
(c) 6 cm (d) 4 cm

6. Starting from E = F/q, find the SI unit and the dimensions of electric field, and hence of electric flux. [2]

7. A very long straight wire carries a uniform linear charge density of +2.0 μC m^{-1}. Find the magnitude and direction of the force on an electron 10 cm from the wire. (Take $1/4\pi\varepsilon_0 = 9 \times 10^9$ N m^2 C^{-2} and $e = 1.6 \times 10^{-19}$ C.) [2]

8. A plastic comb run through dry hair attracts small bits of neutral paper. Explain why. [2]

Every question original, written from NCERT, checked by a second reviewer · photocopy freely for your class

9. Two free point charges +q and +4q are a distance L apart. A third charge Q is placed so that all three charges are in equilibrium. Find the position and the value of Q. [3]

10. A closed surface encloses a small electric dipole of charges ±3.0 μC and a point charge of +4.0 μC. A charge of −6.0 μC lies outside the surface. (a) Find the net electric flux through the surface. (b) Does the −6.0 μC charge affect the electric field on the surface? Does it affect the flux? (Take $\varepsilon_0 = 8.854 \times 10^{-12}\ C^2\ N^{-1}\ m^{-2}$.) [3]

11. Two large parallel plane sheets A and B carry uniform surface charge densities +2σ and −σ. Find the magnitude and direction of the electric field (a) to the left of A, (b) between A and B, (c) to the right of B. Take A on the left. [3]

Every question original, written from NCERT, checked by a second reviewer · photocopy freely for your class