

HOLIDAY HOMEWORK

CLASS XII

- Q.1 What is the nature of force between two point charges q_1 and q_2 if (i) $q_1 + q_2 > 0$ and (ii) $q_1 + q_2 < 0$?
- Q.2 Sketch the electric lines of force for two point charges q_1 and q_2 for (i) $q_1 = q_2$ (ii) $q_1 > q_2$.
- Q.3 An electric lines of force is a continuous curve, i.e., a field line cannot have sudden breaks. Why is it so?
- Q.4 Find expression for force and torque on an electric dipole kept in uniform electric field.
- Q.5 Find an expression for electric potential at a point due to a point charge.

SECTION B

In the following questions, a statement of Assertion (A) is followed by a corresponding statement of Reason (R). Of the following statements, choose the correct option.

- (a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) Both A and R are false.
- Q.6 A : The Coulomb force is the dominating factor in the universe.
R : The Coulomb force is weaker than the gravitational force.
- (a) (b) (c) (d)
- Q.7 A : If there exists a Coulomb attraction between two bodies, both of them may not be charged.
R : In Coulomb attraction, both bodies are oppositely charged.
- (a) (b) (c) (d)

SECTION C

- Q.8 A charge is a property associated with matter due to which it experiences and produces an electric and magnetic field. Charges are

scalar in nature and they add up like real numbers. Also, the total charge of an isolated system is always conserved. When the objects rub against each other, charges acquired by them must be equal and opposite. The charges is quantizes, i.e. all free charges are integral multiple of a basic unit of charge, i.e. $q = \pm ne$.

(i) The cause of charging is

- (a) The actual transfer of proton (b) The actual transfer of electron
(c) The actual transfer of neutron (d) None of the above

(ii) Pick the correct answer

- (a) The glass rod gives proton to silk when they are rubbed against each other.
(b) The glass rod gives electron to silk when they are rubbed against each other.
(c) The glass rod gains proton from silk when they are rubbed against each other.
(d) The glass rod gains electrons from silk when they are rubbed against each other.

(iii) What is the value of charge on a body which carries 20 excess electrons?

- (a) $-3.2 \times 10^{-18}C$ (b) $3.6 \times 10^{-18}C$ (c) $-36.25 \times 10^{-18}C$ (d) None of these

(iv) The ebonite rod, when rubbed with cat's skin acquires a charge of $-1.6 \times 10^{-13}C$. What is the charge on cat's skin?

- (a) $1.6 \times 10^{-13}C$ (b) $3.2 \times 10^{-13}C$ (c) $1.6 \times 10^{-18}C$ (d) None of these