📘 DPP – 1 (Electric Charge, Coulomb's Law, Properties of Charge)

A. MCQ (1 mark each)

1. The value of *1 Coulomb* of charge is equal to approximately:
   (A) $6.25\times10^{18}6$ electrons
   (B) 1.6×10^{-19} electrons
   (C) $9.1\times10^{-31}9.1$ electrons
   (D) None

2. Two charges +Q and –Q separated by distance 2a form:
   (A) Dipole
   (B) Monopole
   (C) Quadrupole
   (D) None

3. Coulomb's law is valid only for:
   (A) Moving charges
   (B) Rest charges
   (C) Both
   (D) None

4. If distance between two charges becomes half, force becomes:
   (A) 2F
   (B) F/2
   (C) 4F
   (D) F/4

5. Charge is always an integral multiple of:
   (A) Proton mass
   (B) Newton
   (C) Elementary charge
   (D) Coulomb's constant

6. SI unit of permittivity is:
   (A) $Nm^2C^{-2}N$
   (B) $C^2N^{-1}m^{-2}$
   (C) C/m
   (D) None

7. Like charges ____ each other.
   (A) Attract

(B) Repel

(C) Neutralise

(D) None

8. 1 μC =

   (A) 10^{-3}C

   (B) 10^{-6}C

   (C) 10^{-9}C

   (D) 10^{6}C

9. Coulomb force is a/an:

   (A) Non-central force

   (B) Contact force

   (C) Long range force

   (D) None

10. The value of Coulomb constant kkk is:

    (A) $9\times109 Nm^2C^{-2}$

    (B) 9×10^{11}

    (C) 9

    (D) None

B. Short Questions (2–3 marks)

1. State and explain quantisation of electric charge.
2. What is superposition principle? Give formula.
3. Define Coulomb's law and write SI units of each term.
4. Write difference between conductor and insulator.
5. State properties of electric charge (any three).

C. Long Questions (5 marks)

1. Define electric dipole moment. Derive the expression for electric field at a point on the axial line of an electric dipole.
2. Derive the expression for electric field intensity due to a point charge.