

DPP – 2 (Electric Field, Electric Field Lines, Point Charge)

A. MCQ

1. SI unit of electric field is:
(A) N/C
(B) N-m
(C) C/N
(D) C/m^2
2. Electric field is a:
(A) scalar
(B) vector
(C) tensor
(D) none
3. Electric field due to point charge varies as:
(A) r
(B) $1/r$
(C) $1/r^2$
(D) r^2
4. Direction of E for $+Q$ charge is:
(A) inward
(B) outward
(C) circular
(D) neutral
5. Electric field lines never:
(A) start
(B) end
(C) intersect
(D) curve
6. Work done on an equipotential surface is:
(A) zero
(B) maximum
(C) minimum
(D) infinite
7. At the centre of an electric dipole, electric field is:
(A) zero
(B) infinite

- (C) constant
- (D) none

8. Electric field due to system of charges is given by:

- (A) conservation rule
- (B) superposition rule
- (C) distribution rule
- (D) none

9. If $E = 0$ at a point, potential must be:

- (A) zero
- (B) constant
- (C) not necessarily zero
- (D) infinite

10. Dimensional formula of electric field:

- (A) $MLT^{-2}A^{-1}$
- (B) $M^{-1}L^{-3}T^4$
- (C) ML^2T^{-3}
- (D) None

B. Short Questions

1. Define electric field and write its SI unit.
2. What are electric field lines? Give two properties.
3. Derive the electric field due to a point charge.
4. Why can electric field lines never intersect?
5. What is linear charge density?

C. Long Questions

1. Derive expression for torque on an electric dipole placed in a uniform electric field.
2. Derive expression for electric field on equatorial line of dipole.