📘 DPP – 3 (Electric Flux, Gauss Law – No Sphere/Shell)

A. MCQ

1. Electric flux ϕ is given by:
   (A) EA
   (B) $\vec{E}\cdot\vec{A}$
   (C) q/ε_0
   (D) All

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

3. Gauss law states that total flux is equal to:
   (A) $E \times A$
   (B) charge enclosed / ε_0
   (C) constant
   (D) zero

4. Flux depends on:
   (A) field
   (B) area
   (C) angle
   (D) all

5. If angle between E and A is 90°, flux =
   (A) EA
   (B) 0
   (C) max
   (D) none

6. Increase in charge increases flux:
   (A) linearly
   (B) inversely
   (C) remains same
   (D) none

7. A Gaussian surface must be:
   (A) real

(B) imaginary
(C) both
(D) none

8. Electric field due to infinite line charge is:
   (A) $\lambda/2\pi\varepsilon_o r$
   (B) $\lambda/4\pi\varepsilon_o r^2$
   (C) zero
   (D) infinite

9. Electric field due to infinite plane sheet is:
   (A) $\sigma / 2\varepsilon_o$
   (B) σ / ε_o
   (C) zero
   (D) infinite

10. Electric flux is a:
    (A) scalar quantity
    (B) vector
    (C) tensor
    (D) none

B. Short Questions

1. Define electric flux and write unit.
2. State Gauss law and its significance.
3. What is Gaussian surface?
4. Expression of electric field due to infinite line charge.
5. Expression for E due to infinite plane sheet.

C. Long Questions

1. Using Gauss's law, derive expression of electric field due to infinite plane sheet.
2. Using Gauss's law, derive expression of electric field due to infinite line charge.