UNIVERSITY OF ENGINEERING AND TECHNILOGY, TAXILA
INDUSTRIAL ENGINEERING DEPARTMENT
MID TERM EXAM

Paper: Applied Physics   **Time Allowed: 90 Min**

Note: Attempt all questions given below.

Q. 1)

Two free point charges +q and +4q are a distance L apart. A third charge is so placed that entire system remains in equilibrium. Find location of third charge.

Q. 2)

Find electric field at point P where electric potential due to a certain charge distribution is given by

$$V(x,y,z) = Ax^2y^3 + B\frac{xy}{z^{3/2}}$$

Q. 3)

Positive charge Q is uniformly distributed along a rod with length a, lying along x-axis between $x = -\frac{a}{2}$ & $+\frac{a}{2}$. Find electric field at a point P located on y-axis at a distance y from origin.

Q. 4)

Two plates of spherical capacitor have radii 38 mm & 40 mm. ($\varepsilon_o = 8.85 \times 10^{-12}$ F/m)

(a) Calculate its capacitance.

(b) What must be plate area of parallel plate capacitor with same plate separation and capacitance?