Q 4 a) figure of IInd plate Capacitance & Derivation (may be by laplace eq^n) ——— [5]

Q 4 b) figure of boundary cond^n ——— 1M
tangential boundary cond^n ——— 2M
Normal boundary cond^n ——— 2M

Q 5 a) figure and Derivation for $\bar{H}$ due to infinite length conductor ——— [5M]

Q 5 b) $H_{t_2} = -30\,a_{\bar{x}} + 50\,a_{\bar{y}}$ A/m ——— 2M

$H_{N_2} = 43.75\,a_{\bar{z}}$ A/m ——— 3M

Q 6 a) figure of boundary cond^n ——— 1M
boundary cond^n for { tangential component ——— 2M
normal component ——— 2M

Q 6 b) Explain scalar magnetic potential ——— [2M]
Vector magnetic potential ——— [3M]

DD Sir

TE E&TC (In term Exam - 30 marks)

Electromagnetics & Transmission lines

TE / Insem. - 129

Solution and marking scheme (Set I)

Q1. a) Coulomb's law statement — 1.

figure for Derivation — 1

Derivation of $E = \frac{\rho_s}{\epsilon} \bar{a}_N$ — 4

Q 1 b) $V = \frac{\bar{P} \cdot \bar{a_r}}{4\pi\epsilon r^2}$ volt — 1 M.

i) $V_A = 0.23051$ Volt — 2M

ii) $V = 1.976$ Volt — 2M.

Q 2 b) statement of Divergence thm. — 1M

proof of Divergence thm — 4M

Q 2 b) statement of Gauss law — 2M

proof of Gauss law — 3 M.

Q 3 a) Derivation of coontinuity eq^n. — 4M

Q 3 b) $E = \frac{Q}{4\pi\epsilon r^2} \bar{a_r} = \frac{11.2975}{r^2}$ — [3]

$W_E = \frac{1}{2} \int_{Vol} \epsilon_0 E^2 dv = 71$ nJ — [3]