

QP Code : 12521

(3 Hours)

[Total Marks :80

- N.B. :** (1) Question No 1 is **compulsory**.
 (2) Attempt any **three** out of remaining five.
 (3) Assume suitable **data** wherever **necessary** and **justify** the **same**.
 (4) **Figures** to the right indicate **full** marks.

1. Attempt any four out of the **five** :-

- (a) Write integral form of Ampere's Law and interpret the same. **5**
 (b) Define Intrinsic Impedance. Calculate its value for free space. **5**
 (c) Give and explain various steps involved in finding characteristic impedance for microstrip line using finite difference Method. **5**
 (d) What do you mean by Depth of penetration. **5**
 (e) What is "loss Tangent". Explain how it classifies lossless dielectrics, lossy Dielectric and good conductor. **5**

2. (a) Derive Maxwell's equation in point form and integral form. **10**
 (b) Compare FDM, FEM & MOM. **5**
 (c) Compare scalar and vector potential. **5**

3. (a) In certain Medium $\vec{E} = [10e^{-0.05x} \sin(2 \times 10^8 t - 2x)] \vec{a}_z$ v/m Find : **10**
 (a) Propagation constant.
 (b) Wavelength
 (c) Speed of wave
 (d) Skin Depth.

- (b) Derive wave equation for good dielectric medium. **5**
 (c) Give Boundary conditions for Electric and magnetic field for interface between good conductor and dielectric. **5**

4. (a) Use method of moment to find the capacitance of parallel plate capacitor of figure 1. Take $a = 1$ meter; $b = 1$ meter; $d = 1$ meter and $\epsilon_r = 1$. **10**

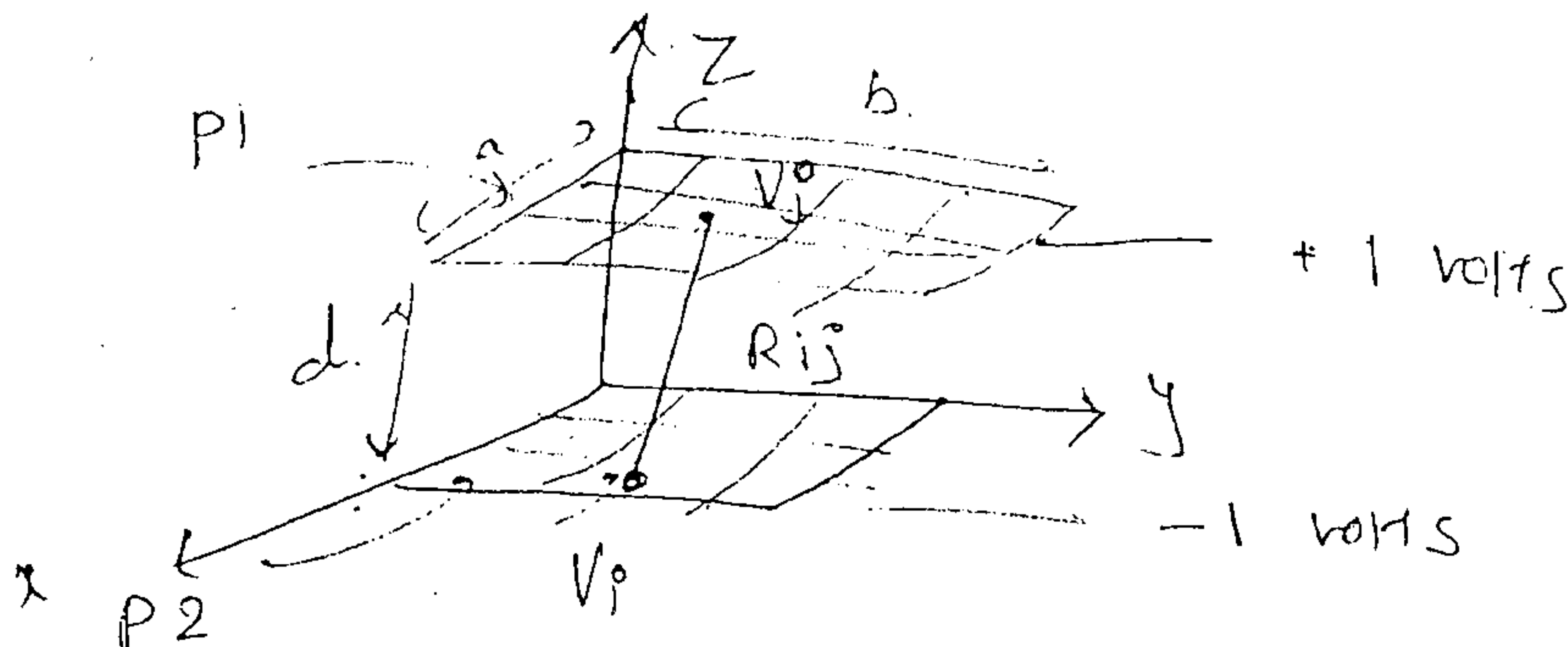


Figure - 1

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- (b) Derive an expression for magnetic field intensity due to finite long straight element. 10
5. (a) What do you mean by Fading ? How it can be minimized ? 5
(b) Write a short note on Ionospheric Propagation. 5
(c) Explain Super Refraction and Tropospheric Fading. 10
6. (a) Prove that static electric field is irrotational and static magnetic field is solenoidal. 10
(b) Explain Reflection of Uniform Plane wave at Oblique Incidence. 10

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