

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 10  
 1. Take  $a = 1$  meter;  $b = 1$  meter;  $d = 1$  meter and  $\epsilon_r = 1$ .

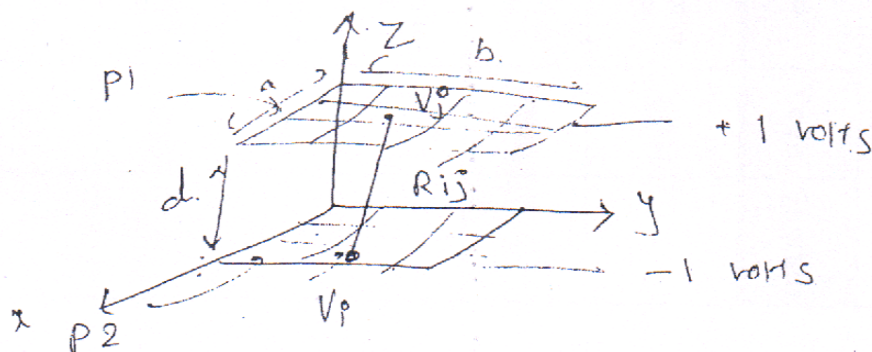


Figure - 1.

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