

(3 hrs.)

Maximum Marks = 80

NB:

1. Question No. 1 is compulsory and solve any THREE questions from remaining questions
2. Assume suitable data if necessary
3. Draw clean and neat diagrams

Q1.	Answer the following:	Marks
a.	Derive an equation for Ampere Circuital Law.	5
b.	What is Skin effect? Explain applications of Skin effect.	5
c.	Define gain, bandwidth, HPBW and directivity with respect to antenna.	5
d.	Explain boundary conditions of E and H fields for two media.	5
Q2.	A. Find \vec{D} at P(6,8,-10) caused by a) a point charge of 30mC at the origin b) a uniform line charge $\rho_L = 40 \mu\text{C/m}$ on the z axis.	10
	B. A uniform plane wave in a medium having $\sigma = 10^{-3} \text{ s/m}$, $\epsilon = 80 \epsilon_0$ and $\mu = \mu_0$ is having frequency of 10kHz. Calculate- a) attenuation constant b) phase constant c) wave length d) velocity of wave.	10
Q3.	A. Derive an expression for reflection and transmission coefficient for normal incidence in case of reflection from perfect dielectric.	10
	B. Define polarization of a wave. Explain the types of polarization.	10
Q4.	A. Derive expressions for electric and magnetic fields in far field region of an infinitesimal dipole.	10
	B. Write a note on Smith chart and explain the steps to calculate SWR from the chart.	10
Q5.	A. Write short notes on different EMI control techniques.	10
	B. A lossless transmission line is 80 cm long and operates at a frequency of 600 MHz The line parameters are $L = 0.25 \mu\text{H/m}$ and $C = 100 \text{ pF/m}$. Find characteristic impedance, the phase constant and the phase velocity.	10
Q6.	A. Starting with Maxwell's equation in differential form, explain the concept of displacement current.	10
	B. Write short notes on sources and characteristics of EMI.	10
