Question Paper Code: R18A22EC02

R18

ANURAG Engineering College

(An Autonomous Institution)

II B.Tech II Semester Supplementary Examinations, Jan/Feb-2024

ELECTROMAGNETIC THEORY AND TRANSMISSION LINES

(ELECTRONICS AND COMMUNICATION ENGINEERING)

Time: 3 Hours **Max. Marks: 75**

Section – A (Short Answer type questions) (25 Marks)

Answer All Questions		Course Outcome	B.T Level	Marks
1.	Derive the relationship between E and V.	CO1	L1	2M
2.	State the Gauss's Law and List the Applications of Gauss Law.	CO1	L2	3M
3.	List the applications of amperes circuit law.	CO2	L1	2M
4.	Define Inductance? What is the energy stored in an inductor.	CO2	L2	3M
5.	What is displacement current density.	CO3	L1	2M
6.	Derive the induced emf using faraday's law.	CO3	L2	3M
7.	What is uniform plane wave?	CO4	L1	2M
8.	Define Surface impedance?	CO4	L2	3M
9.	Define transmission line? What are the different types of transmission lines?	CO5	L1	2M
10.	What are the different types of distortions in a transmission line and What's the condition for distortion less transmission?	CO5	L2	3M

Section B (Essay Questions)

Answer all questions, each question carries equal marks. **(5 X 10M = 50M)**

11. A)	State and explain Coulomb's law. Obtain an expression in vector form.	CO1	L3	10M
	OR			
B)	Define electric field strength and derive an expression for electric field intensity due to infinite line charge located along z-axis from $-\infty$ to ∞.	CO1	L3	10M
12. A)	State and explain Biot-Savart's law.	CO2	L3	10M
	OR			
B)	Derive the boundary conditions between conductor and dielectric?	CO2	L3	10M
13. A)	Describe the inconsistency in Ampere's Law? How it is rectified by Maxwell?	CO3	L3	10M
	OR			
B)	Write Maxwell's equations in different final forms and in word Statements.	CO3	L3	10M
14. A)	What is uniform plane wave and obtain wave equations for good conductors?	CO4	L3	10M
	OR			
B)	Define Brewster angle and derive the expression for Brewster angle when a wave is parallel polarized.	CO4	L3	10M
15. A)	Derive the expression for characteristic impedance.	CO5	L3	10M
	OR			
B)	Give details about smith chart and write steps how to calculate impedance, reactance, and wavelength using this chart.	CO5	L3	10M