Question Paper Code: R15A31EC03

R15

ANURAG Engineering College

(An Autonomous Institution)

III B.Tech I Semester Supplementary Examinations, Dec–2023/Jan-2024

ANTENNAS AND WAVE PROPAGATION

(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.	Calculate the radiation resistance of half wave dipole.	CO1	L2	2M
2.	What are short Antennas and list out various types?	CO1	L1	3M
3.	Draw the structure of Yagi-Uda antenna and give the specifications of elements.	CO2	L1	2M
4.	What is the principle of pattern multiplication?	CO2	L1	3M
5.	Classify the modes of helical antenna based on size.	CO3	L2	2M
6.	Define Pyramidal Horn antenna.	CO3	L1	3M
7.	Define critical angle and LOS.	CO4	L1	2M
8.	With reference to paraboloids, explain the Aperture efficiency.	CO4	L2	3M
9.	In which frequency range Sky wave propagation is useful?	CO5	L2	2M
10.	Write short notes on Ionospheric abnormalities.	CO5	L2	3M

Section B (Essay Questions)

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

11.A)	Explain the working principle of a two-wire antenna.	CO1	L2	10M
	OR			
B)	Compare monopole antennas and dipole antennas.	CO1	L3	10M
12.A)	Show that the directivity can be improved by using n elements in broadside or end fire array.	CO2	L3	10M
	OR			
B)	Estimate the resultant radiation pattern of N=8 element linear uniform distributed array using pattern multiplication.	CO2	L3	10M
13.A)	Sketch the typical geometry of a helical antenna radiating in axial mode. List out all its parameters and basic characteristics.	CO3	L2	10M
	OR			
B)	What is the principle of equality of path length? How it is applicable to horn antenna? Obtain an expression for the directivity of pyramidal horn in terms of its aperture dimensions.	CO3	L2	10M
14.A)	How will you feed a parabolic reflector antenna? Explain aperture blockage and offset feed.	CO4	L3	10M
	OR			
B)	Discuss Dielectric and metal Lens Antennas and their applications.	CO4	L3	10M
15.A)	Derive the relationship between MUF and critical frequency.	CO5	L2	10M
	OR			
B)	Write a short notes on i) MUF ii) Virtual Height iii) Wave tilt iv) Multi hop Transmission.	CO5	L3	10M