Question Paper Code: R18A31EC01

R18

ANURAG Engineering College

(An Autonomous Institution)

III B.Tech I Semester Supplementary Examinations, June/July - 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.	What are the two important fields used in the Hertizian dipole antenna?	CO1	L1	2M
2.	Calculate the physical height of a half wave dipole (λ/2) having antenna Q of 30 and bandwidth of 10 MHz.	CO1	L2	3M
3.	List the different conditions that can be applied to the antenna array?	CO2	L2	2M
4.	Distinguish between broad side and End fire array.	CO2	L2	3M
5.	List out the applications of helical antenna.	CO3	L2	2M
6.	What is an axial mode of helix antenna? How the axial mode is improved?	CO3	L2	3M
7.	What do you mean by lens antenna	CO4	L1	2M
8.	Describe the possible errors in antenna measurements?	CO4	L2	3M
9.	Recall the factors that affect radio wave propagation?	CO5	L2	2M
10.	Find the maximum distance that can be covered by a space wave, when the antenna heights are 60 m and 120 m.	CO5	L2	3M

Section B (Essay Questions)

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

11. A)	Derive radiation resistance for a half wavelength dipole.	CO1	L3	10M
	OR			
B)	Explain in detail about Effective aperture and derive its equation in different conditions.	CO1	L3	10M
12. A)	Draw the radiation pattern of array of two-point sources with equal amplitude and opposite phase by calculating the maximum, minimum and half power point directions	CO2	L3	10M
	OR			
B)	Illustrate binomial array and phased array antenna with example.	CO2	L2	10M
13. A)	With necessary illustrations, explain the radiation characteristics of Microstrip antenna and mention its possible application	CO3	L3	10M
	OR			
B)	Explain the radiation mechanism and features of Microwave Horn antenna with diagram.	CO3	L3	10M
14. A)	Discuss in detail about parabolic antennas	CO4	L2	10M
	OR			
B)	Draw the neat set up for measuring gain of an antenna and discuss its operation.	CO4	L3	10M

15. A)	Describe in brief about attenuation characteristics of ground wave propagation and obtain expression for field strength.	CO5	L3	10M
	OR			
B)	Why do we use high frequency waves in sky wave propagation? Explain the mechanisms of propagation.	CO5	L3	10M