

ANURAG Engineering College

(An Autonomous Institution)

III B.Tech I Semester Supplementary Examinations, December - 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. Define Isotropic antenna. What is the directivity of isotropic antenna?	CO1	L1	2M
2. Write the applications of Loop antenna.	CO1	L1	3M
3. Differentiate uniform linear array and non-uniform linear array.	CO2	L1	2M
4. Compare between VHF and UHF antennas.	CO2	L1	3M
5. List out various types of Horn antennas.	CO3	L1	2M
6. What is the pitch angle in Helical antenna and how it is calculated?	CO3	L1	3M
7. Define included angle in corner reflector antenna?	CO4	L2	2M
8. What is reciprocity theorem in terms of antenna parameters?	CO4	L1	3M
9. Write different layers of Ionosphere.	CO5	L1	2M
10. Define Wave Tilt.	CO5	L2	3M

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

11. A) Define radiation resistance? Show that the radiation resistance of short dipole is $80\pi^2 (dl/\lambda)^2$.	CO1	L3	10M
B) Differentiate small loop antenna and large loop antenna? Derive radiation resistance of small loop antenna	CO1	L3	10M
12. A) Calculate the directivity of BSA and EFA consisting of 8 isotropic elements separated by $\lambda/4$ distance.	CO2	L3	10M
B) Sketch radiation pattern of 4 element linear array fed in phase spaced $\lambda/2$ by using principle of pattern multiplication.	CO2	L2	10M
13. A) Explain the constructional details of helical antenna with neat diagram in detail. And also explain the operation of helical antenna under normal mode	CO3	L2	10M
B) i) Explain the features of Micro strip Antenna. ii) Explain the geometry of rectangular patch antenna.	CO3	L2	5M 5M
14. A) A Parabolic reflector of 1.8m diameter is used at 6 GHz. Calculate the gain in dB.	CO4	L2	10M
B) List the different sources of errors in antenna measurements.	CO4	L2	10M
15. A) i) Explain different layers of Ionosphere ii) Explain briefly about scattering phenomenon	CO5	L2	10M
B) How the field strength is varied according to the distance and height in space wave propagation.	CO5	L3	10M

