



R18 Regulation

Subject Code: 2P6DA

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A+' Grade)
B.Tech VI Semester Supplementary Examinations, February 2024

ANTENNAS AND WAVE PROPAGATION
(*Electronics and Communication Engineering*)

Maximum Marks: 70

Date: 15.02.2024 Duration: 3 hours

- Note: 1. This question paper contains two parts A and B.
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10x2M=20 Marks)

	CO	Bloom Tx
1 What is the directivity of isotropic antenna?	CO1	L1
2 State and explain the concept of Helmholtz theorem.	CO1	L2
3 List out various types of Horn antennas.		L1
4 Define Folded dipole antenna.	CO2	
5 Define included angle in corner reflector antenna?	CO2	L1
6 List the advantages of Micro strip antenna.	CO3	L1
7 Write Hansen and Wood yard's phase shift conditions to increase the directivity of EFA.	CO3	L1
8 Define Linear array and Uniform linear array.	CO4	L1
9 Define Optimum usable frequency of an Ionosphere layer.	CO4	L1
10 Define wave tilt?	CO5	L1

Part-B

- Answer All the following questions. (5X10M=50Marks)
- 11 Discuss about the following antenna parameters. (3+3+4)
(i) Radiation intensity (iii) Beam solid angle
(ii) Effective aperture
- CO1 L4
- OR
- 12 Show that the radiation resistance of short dipole is $80\pi^2 (dl/\lambda)^2$. (10)
- CO1 L4
- 13 Explain the constructional details of helical antenna with neat diagram in detail. And also explain the operation of helical antenna under normal mode. (10)
- CO2 L3
- OR
- 14 a) Explain Fermat's principle in horn antenna. (5)
b) Discuss Yagi uda antenna in detail. (5)
- CO2 L4
- 15 a) Explain the features of Micro strip Antenna. (5)
b) Explain the geometry of Rectangular patch antenna. (5)
- CO3 L3

OR

- 16 a) Explain the geometry of parabolic reflector antenna? (5) CO3 L4
b) A Parabolic reflector of 1.8m diameter is used at 6GHz. Calculate the gain in dB. (5)
- 17 a) Compare Broadside array and End fire array. (5) L4
b) Calculate the directivity of BSA and EFA consisting 8 isotropic elements separated by $\lambda/4$ distance. (5) CO4

OR

- 18 a) Draw the neat set up for measuring gain of an antenna and discuss its operation. (5) CO4 L3
b) List the different sources of errors in antenna measurements. (5)
- 19 Explain the following: i) M- Curves (5) CO5 L3
ii) Duct propagation (5)

OR

- 20 a) How the field strength is varied according to the distance and height in space wave propagation. (5) CO5 L3
b) Explain the Tropospheric propagation. (5)