



Regulation R18

Subject Code: 2P6DA

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech VI Semester Supplementary Examinations, January 2023

ANTENNAS AND WAVE PROPAGATION
(Electronics and Communication Engineering)

Maximum Marks: 70

07/01/2023

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)

- 1 Define dipole antenna.
- 2 Define Radiation Pattern of an antenna.
- 3 What is the pitch angle in Helical antenna and how it is calculated?
- 4 List types of horn antenna.
- 5 Define included angle in corner reflector antenna?
- 6 List the advantages of Micro strip antenna.
- 7 Write Hansen and Wood yard's phase shift conditions to increase the directivity of EFA.
- 8 Define Linear array and Uniform linear array.
- 9 Define Optimum usable frequency of an Ionosphere layer.
- 10 Define wave tilt?

Part-B

Answer All the following questions.

(10M X 5=50Marks)

- 11 Derive the radiation resistance of Quarter wave Monopole Antenna. [10]
OR
- 12 Differentiate small loop antenna and large loop antenna? Derive radiation resistance of small loop antenna. [10]
- 13 Discuss the construction and basic principle of operation of Helical Antenna under Normal and Axial mode of operation. [10]
OR
- 14 Explain the constructional details and radiation pattern of Yagi Uda Antenna with a neat diagram. [10]
- 15 a) Explain the features of Micro strip Antenna. [5]
b) Explain the geometry of Rectangular patch antenna. [5]

OR

- 16 a) Explain the geometry of parabolic reflector antenna? [5]
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]
b) Calculate the directivity of BSA and EFA consisting 8 isotropic elements separated by $\lambda/4$ distance. [5]

OR

- 18 a) Draw the neat set up for measuring gain of an antenna and discuss its operation. [5]
b) List the different sources of errors in antenna measurements. [5]
- 19 Explain the following: i) M- Curves [5]
ii) Duct propagation [5]
- OR
- 20 How the field strength is varied according to the distance and height in space wave propagation. [10]