



R18 Regulation

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

Subject code:2P6DA

## B.Tech VI Semester Regular/Supplementary Examinations, June 2022

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

**Maximum Marks: 70**

Date:17.05.2022 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 which carries 10M.  
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 Directivity of an antenna.
- 2 Define Quarter wave Monopole and Halfwave Dipole.
- 3 What are the three elements of Yagi-Uda antenna?
- 4 Define array of an antenna
- 5 Define Reflector Antenna.
- 6 What are the advantages of microstrip patch antenna?
- 7 Define principle of pattern multiplication.
- 8 Define near and far field regions.
- 9 What are the different modes of propagation?
- 10 Define Virtual Height and Skip distance.

#### Part-B

Answer All the following questions.

(5X10M=50Marks)

11 A. Define the terms:

5M

- i. Beam Width
- ii. Side Lobe Level
- iii. Polarization
- iv. Effective Aperture Area.

B. State the Reciprocity Theorem for Antennas? Prove that the Self-Impedance of an Antenna in transmitting and receiving mode is same.

5M

OR

12 Show that the radiation resistance of a half wave dipole is 73.

10M

13 A. Explain different types of Horn antennas.

5M

B. Write short notes on "Helical Antenna".

5M

OR

14 Explain the working of Yagi-Uda Antenna.

10M

- 15 A. Explain features of MSA. 5M  
B. Explain different types of Reflectors. 5M
- OR
- 16 A. Explain various feed methods of Parabolic reflector. 5M  
B. Explain geometry of rectangular patch antenna. 5M
- 17 Derive the field components and draw the field pattern for two-point source with spacing of  $\lambda/2$  and fed with currents of equal magnitude and phase. 10M
- OR
- 18 With neat set up, explain the absolute method of measuring the gain of an antenna. 10M
- 19 A. Write short notes on Characteristics of Ground wave propagation. 5M  
B. Explain about M curves. 5M
- OR
- 20 What is the effect of the curvature of earth's surface on the propagation of microwave signal in a line of sight link. 10M