Q.P. Code: 18EC0419 **R18**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year II Semester Regular Examinations July-2021

ANTENNAS AND WAVE PROPAGATION

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 60

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Define Radiation intensity of an antenna.	L1	2M
	b	What are the advantages of Yagi-Uda antenna?	L1	2M
	c	What is the need for antenna measurements?	L1	2M
	d	What is meant by pattern multiplication?	L1	2M
	e	Determine the maximum usable frequency for a critical frequency of 20 MHz and an angle of incidence of 35degrees.	L1	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Explain about Antenna Directivity and Effective aperture of an Antenna	L2	4M
	b	Derive expression for Electric and Magnetic Field radiated by Quarter Wave Monopole.	L3	6M

OR

3	a	Discuss about Radiation Pattern & Antenna Bandwidth and its purpose	L2	4M
	b	A dipole having a length of 3 cm is operated at 1 GHz. The efficiency factor K=0.6. calculate the radiation resistance, antenna gain and effective aperture.	L3	6M

UNIT-II

4	a	Discuss about the helical antenna geometry, axial mode of radiation and its applications	L3	5M
	b	Calculate the directivity of pyramidal horn antenna with an aperture. If size 12x12cm operating with 3.2cm wavelength.	L5	5M

OR

5	a	Describe Helical antenna and its Modes & applications	L1	4M
	b	Design Yagi-Uda antenna of six elements to provide a gain of 12dB if the operating frequency is 200 MHz	L6	6M

UNIT-III

6	a	Draw and explain the principle of parabolic reflector.	L2	4M
	b	A parabolic dish provides a power gain of 50 dB at 10 GHz with 70% efficiency. Find out (i)HPBW (ii) BWFN and (iii) Diameter	L2	6M

OR

7	a	Explain sources of Error in Antenna measurement.	L2	4M
	b	Explain Gain measurement by direct comparison method.	L1	6M

UNIT-IV

8	a	Explain the effect of uniform and non-uniform amplitude distributions.	L2	5M
	b	Show that Directivity of BSA, L>>d is D0=2(d/λ).	L5	5M

OR

9	a	Define and differentiate Broad side array with end fire array	L5	4M
	b	Explain End fire array with increase directivity and derive the directivity equation.	L5	6M

UNIT-V

10	a	Discuss about optimum working frequency and its significance.	L5	5M
	b	Explain lowest usable high frequency (LUHF) and give its significance.	L5	5M

OR

11	a	Explain the relation between MUF and skip distance.	L5	6M
	b	Describe the energy loss in Ionosphere.	L5	4M

END