SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Regular Examinations December-2021
ANTENNAS AND WAVE PROPAGATION
(Electronics and Communication Engineering)

Time: 3 hours　　　　　　　　　　　　　　　　　　　　Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Write short notes on Radiation Pattern and Beam Efficiency.	L1	6M
	b	Explain the Antenna Noise Temperature and Radiation Resistance.	L2	6M

OR

2	a	Calculate radiation resistance of a dipole antenna of length $\lambda/8$m.	L2	6M
	b	Establish the relation between directivity and Effective Aperture.	L4	6M

UNIT-II

3	a	Explain about construction and operation of Yagi-Uda antenna with neat sketch.	L2	6M
	b	Discuss about the horn antenna types & its characteristics.	L2	6M

OR

4	a	Calculate the directivity of pyramidal horn antenna with an aperture. If size 12x12cm operating with 3.2cm wavelength.	L3	6M
	b	Discuss about the helical antenna geometry, Normal mode of radiation and its applications.	L2	6M

UNIT-III

5	a	What are the types of reflectors? Explain the features of parabolic reflectors.	L1	6M
	b	A parabolic dish provides a power gain of 50 dB at 10 GHz with 70% efficiency. Find out　i)HPBW　　ii) BWFN　　iii) Diameter	L3	6M

OR

6	a	Draw and explain the principle of parabolic reflector.	L2	6M
	b	What is a patch antenna? What are the applications of Microstrip antenna?	L1	6M

UNIT-IV

7	a	Write short notes on broad side and end fire arrays.	L1	6M
	b	Explain pattern multiplication with appropriate examples.	L3	6M

OR

8	a	Explain about the Binomial array.	L2	6M
	b	A broad side array operating at 10cm wavelength consists of 4 half wave dipole spaced 50 cm each element carries radio frequency current in the same phase and magnitude 0.25A. Calculate the radiated power, half power beam width of major lobe.	L5	6M

UNIT-V

9	a	Explain Skip distance and derive its expression.	L3	6M
	b	Explain lowest usable high frequency (LUHF) and give its significance.	L2	6M

OR

10	a	Explain the energy loss in Ionosphere.	L2	6M
	b	For a flat earth assume that at 400 km reflection takes place. The maximum density of ionosphere corresponds to a refractive index of 0.9 at 10 MHz. Calculate range for which maximum usable frequency is 10 MHz.	L4	6M

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