O.P.Code: 23EC0413	R23	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. III Year I Semester Regular Examinations December-2025

ANTENNAS & WAVE PROPAGATION

(Electronics & Communications Engineering)

Time: 3 Hours **Max. Marks: 70**

PART-A

(Answer all the Questions **10 x 2 = 20** Marks)

1	a	Define Bandwidth of antenna.	CO1	L1	2M
	b	Define Resolution of antenna.	CO1	L1	2M
	c	List few directional finding antennas.	CO2	L1	2M
	d	Define Pitch angle.	CO2	L1	2M
	e	Name a feed method for parabolic reflectors.	CO3	L1	2M
	f	Define corner reflector antenna.	CO3	L1	2M
	g	Define an antenna array.	CO4	L1	2M
	h	What is pattern multiplication?	CO4	L1	2M
	i	What are the modes of propagation?	CO6	L1	2M
	j	Define skip distance.	CO6	L1	2M

PART-B

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

UNIT-I

2	a	Explain the radiation mechanism in single wire, two wire, and dipoles.	CO1	L2	6M
	b	Define the radiation pattern of an antenna and its types with neat sketch.	CO1	L2	4M
		OR			
3		Derive the radiation parameters of Half wave dipole using field components.	CO1	L3	10M

UNIT-II

4		Explain about construction and operation of Yagi-Uda antenna with neat sketch.	CO2	L2	10M
		OR			
5	a	Discuss the design considerations of pyramidal horn antenna.	CO2	L2	6M
	b	Calculate the directivity of pyramidal horn antenna with an aperture. If size 12x12cm operating with 3.2cm wavelength.	CO2	L3	4M

UNIT-III

6	a	Explain about micro strip antennas and its types with neat diagrams.	CO3	L2	6M
	b	Give the advantages and limitations of micro strip antennas.	CO3	L1	4M
		OR			
7	a	A parabolic dish with D = 1.2 m, η = 65% operates at f = 10 GHz. i). Calculate the gain in dBi. ii).Estimate the HPBW (degrees) and effective aperture Ae.	CO3	L3	5M
	b	Describe the differences between a flat sheet reflector and a corner reflector.	CO3	L4	5M

UNIT-IV

8	a	What is antenna array and explain its types?	CO4	L2	8M
	b	Define the point sources.	CO4	L1	2M
		OR			
9		Explain the radiation pattern measurement with fundamental procedure, arrangements and distance requirement.	CO5	L2	10M

UNIT-V

10	a	Explain the Structure of Ground wave propagation with neat sketch.	CO6	L2	5M
	b	Discuss Reflection and Refraction of space wave propagation.	CO6	L2	5M
		OR			
11		Draw and explain the structure of Ionosphere with its typical electron density variation characteristics.	CO6	L3	10M

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