Q.P. Code: 16EC418 **R16**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations Feb-2021

ANTENNAS & 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	Define Effective Aperture and List the types of Apertures	6M
	b	Discuss Effective Height of Antenna and Antenna Temperature.	6M
		OR	
2	a	Calculate HPBW and FNBW for antenna has a $E(\theta)=\cos\theta\cos2\theta$ for $0^o \leq \theta \leq 90^o$	6M
	b	Calculate the efficiency of antenna if radiation resistance is 72Ω and loss resistance is 8Ω.	6M

UNIT-II

3	a	Discuss the design considerations of pyramidal horn antenna.	8M
	b	Calculate the directivity (dB) of 20 turns, having 12^o circumference equal to wavelength of helical antenna.	4M
		OR	
4	a	Design Yagi-Uda antenna of six elements to provide a gain of 12db if the operating frequency is 200 MHz.	7M
	b	Explain parasitic elements and where they are used.	5M

UNIT-III

5	a	Explain about micro strip antennas with neat diagrams.	6M
	b	Discuss the application of image antenna concept to the 90^o corner reflector.	6M
		OR	
6	a	List the advantages and limitations of micro strip antennas.	5M
	b	A parabolic reflector antenna with diameter 20 m is designed to operate at frequency of 6 GHz and illumination efficiency of 0.54.Calculate antenna gain and decibels.	7M

UNIT-IV

7	a	Prove that Directivity of BSA, L>>d is $D_0=2(d/\lambda)$.	6M
	b	Explain broad side and end fire arrays.	6M
		OR	
8	a	Derive the expression for far field pattern of an array of two isotropic points Sources at equal amplitude & opposite phase.	6M
	b	Define directivity. Write the procedure for the measurement of directivity.	6M

UNIT-V

9	a	Explain i) Multihop propagation ii) MUF	6M
	b	Define fading and list different types of fading and explain.	6M
		OR	
10	a	VHF Communication is to be established with 50W transmitted at 100MHz. Calculate the LOS distance if the heights of transmitting and receiving antennas are respectively 50 m and 10m.Assuming the capture area of transmitting antenna is 25 $m2$, calculate the field strength at the receiving antenna end neglecting ground reflected wave.	6M
	b	Explain i) Critical frequency ii) Ray path.	6M

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