O.P.Code: 20EC0423	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech III Year II Semester Regular Examinations August-2023

MICROWAVE THEORY & TECHNIQUES
(Electronics & Communications Engineering)

Time: 3 Hours **Max. Marks: 60**

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

		UNIT-I			
1	a	Deduce the relationship between normal wavelength, cut-off wavelength and guided wavelength.	CO1	L4	6M
	b	Discuss Insertion loss that occurs in microwave transmission.	CO5	L2	6M
		OR			
2	a	Derive the expression for group velocity.	CO1	L3	6M
	b	The dimensions of a guide are 2.5x1cms.The frequency is 8.6 GHz. Find the cutoff frequencies for TE_{10} and TE_{01} mode.	CO5	L4	6M
		UNIT-II			
3	a	Explain with neat sketch the working of coaxial line transmission line.	CO1	L2	6M
	b	Discuss the Faraday's rotation and Recall the microwave devices which are used f or Faraday rotation.	CO4	L2	6M
		OR			
4	a	Explain the working of Microstrip line. Draw its field distribution diagram.	CO2	L2	6M
	b	Derive the S-matrix for series connection of two port network.	CO4	L3	6M
		UNIT-III			
5	a	Describe the following attenuators: i) Resistive Card attenuator ii)Rotary Vane Attenuator	CO2	L2	6M
	b	List out the properties of S-matrix.	CO5	L2	6M
		OR			
6	a	Construct the microwave Tee, whose rectangular slot is cut along the wider dimension, Describe in detail.	CO1	L2	6M
	b	Discuss about the applications of the magic Tee.	CO3	L2	6M
		UNIT-IV			
7	a	Explain the constructional details and principle of operation of two cavity klystron with the neat sketch.	CO1	L2	6M
	b	Discuss about magnetron and its various modes.	CO4	L2	6M
		OR			
8	a	Distinguish between O type Microwave tubes and M type Microwave tubes.	CO3	L4	6M
	b	Explain the process of velocity modulation of a Reflex Klystron.	CO4	L2	6M
		UNIT-V			
9	a	With the help of a neat sketch, briefly explain the functions of different blocks of a microwave bench.	CO4	L2	6M
	b	Explain about measurement of attenuation using a power ratio method.	CO4	L2	6M
		OR			
10	a	With the help of wave meter method explain the microwave frequency measurement.	CO5	L3	6M
	b	Explain the measurement of Quality factor (Q) using Reflectometer method.	CO6	L2	6M

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