Q.P. Code: 19EC0422 **R19**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year II Semester Regular Examinations August-2022

MICROWAVE THEORY AND TECHNIQUES

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	a	Discuss in detail about the concept of mode	L2	6M
	b	Explain about various losses that occur in microwave transmission	L2	6M
		OR		
2	a	Define the following terms i) Guide wavelength ii) Cut off frequency iii) Cut off wavelength.	L2	6M
	b	List out the features of TEM, TE and TM Modes.	L2	6M
		UNIT-II		
3	a	.Explain with neat sketch the working of coaxial line transmission line.	L1	6M
	b	What is Isolator? Derive its S-matrix.	L1	6M
		OR		
4	a	Derive the equation for the propagation of TE waves in rectangular waveguide.	L3	6M
	b	Explain the working principle of Gyrator with neat sketch.	L2	6M
		UNIT-III		
5	a	Describe the following attenuators i) Resistive Card attenuator ii)Rotary Vane Attenuator	L2	6M
	b	Demonstrate the working of Directional Coupler with suitable diagram & Express its Coupling factor and directivity.	L2	6M
		OR		
6	a	Identify the microwave tee, whose rectangular slot is cut along the broader dimension, Describe in detail.	L3	6M
	b	Discuss about the applications of the magic Tee.	L2	6M
		UNIT-IV		
7	a	Mention the limitations and losses of conventional tubes usage at Microwave frequencies.	L2	6M
	b	A two cavity klystron amplifier has the following characteristics: Voltage gain = 15 dB, Input Power = 5 mW, R_{sh} of input cavity = 30 k ohm, R_{sh} of output cavity =40 k ohm, load impedance = 40 Kohm. Find input rms voltage and the output rms voltage.	L2	6M
		OR		
8	a	Explain the velocity modulation process in two cavity Klystron tube and derive the equation for velocity modulation.	L2	6M
	b	Explain in detail about 8- Cavity magnetron with suitable diagram.	L2	6M

UNIT-V

9	a	What are the precautions to be taken while setting up microwave bench for measurement of various parameters? Explain.	L6	6M
	b	With the help of wave meter method explain the microwave frequency measurement	L1	6M

OR

10	a	Discuss in detail about the microwave power measurement using Bolometric technique.	L2	6M
	b	Describe the measurement of impedance using slotted line method.	L4	6M

*** END ***