R18 Regulation *Subject code: 2P7DA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VII Semester Supplementary Examinations, November 2023

MICROWAVE ENGINEERING

(Electronics and Communication Engineering)

Maximum Marks: 70 Date:11.12.2023 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

	Part-A	
All the following questions carry equal marks (10x2M=20 Marks)		
1	Define Dominant mode. What is the dominant mode in Rectangular waveguides.	L1
2	List the typical applications of microwaves	L1
3	Define Attenuator.	L1
4	Define Coupling factor of Directional Coupler.	L1
5	List the applications of 2 cavity Klystron Amplifier.	L1
6	Define velocity modulation	L1
7	What are cross-field devices.	L1
8	What is the need for Slow wave structure in TWT.	L1
9	What are the properties of S-Matrix.	L1
10	State the various methods for measuring attenuation.	L1
	Part-B	
Answer All the following questions. (5X10M=50Marks)		
11	Derive all the wave equations for aTM mode and obtain all the field components in a Rectangular Waveguide. [10]	L2
	OR	
12	Discuss the power Transmission in a Rectangular Waveguide. [10]	L1
13	What is a microwave phase shifter ? Discuss the working of a phase shifter. [10]	L2
	OR	
14	Explain the operation of ferrite Gyrator using a neat diagram. [10]	L2
15	What is velocity modulation? Explain the bunching process in 2- cavity Klystron amplifier using applegate diagram. [10]	L2
	OR	
16	Explain the construction and working of TWT. [10]	L2
17	How is bunching achieved in a Cavity Magnetron. Explain with the help of the neat sketch. [10]	L2
	OR	
18	Explain the operation of GUNN diode using 2 -valley theory. [10]	L2
19	Derive the S-Matrix of H-plane TEE. [10]	L2
	OR	
20	Derive the S-Marix of E Plane TEE. [10]	L2