

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024

Subject Code:2171001

Date:24-05-2024

Subject Name: Microwave Engineering

Time:02:30 PM TO 05:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Briefly explain advantages of Microwave.	03
	(b) Write a brief note on various losses associated with microwave transmission.	04
	(c) Draw equivalent circuit of transmission line and derive basic equations for voltage and current on transmission line.	07
Q.2	(a) Write a short-note on Microwave Frequency bands.	03
	(b) Define: (1) Characteristic Impedance (2) VSWR (3) Group velocity (4) Phase velocity	04
	(c) Why Scattering parameters are used for higher frequencies? Discuss the properties of S parameters of microwave devices in brief.	07
OR		
	(c) Write short note on Microstrip line.	07
Q.3	(a) Discuss the characteristics of TEM, TE and TM Mode.	03
	(b) Explain following waveguide parameters (1) cut-off wavelength (2) guide length	04
	(c) Describe structure of waveguide corners, bends and twists with diagrams.	07
OR		
Q.3	(a) Define: (1) Return loss (2) Propagation Constant (3) Transmission Co-efficient	03
	(b) Describe any one power measurement method at microwave frequency.	04
	(c) Explain in detail construction, characteristic and application of Gunn diode.	07
Q.4	(a) Draw schematic of four port circulator and explain its working.	03
	(b) Describe Impedance measurement technique at microwave operating frequency.	04
	(c) Write short notes Two Cavity Klystron.	07
OR		
Q.4	(a) Briefly explain about Microwave hazards on Human body.	03

- (b) Explain in brief microwave imaging **04**
(c) Write a short-note on spectrum analyzer for microwave measurements. **07**
- Q.5** (a) Write short note on Radiometer Systems. **03**
(b) Briefly explain Remote Sensing system. **04**
(c) Write a short-note on following: **07**
(1) Electromagnetic interference (EMI)
(2) Electromagnetic compatibility (EMC)
- OR**
- Q.5** (a) Briefly explain general applications of Microwaves. **03**
(b) Write a short note on PIN diode. **04**
(c) Explain in detail any one Microwave Antenna. **07**
