

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2018

Subject Code: 2171001
Date: 15/11/2018
Subject Name: Microwave Engineering
Time: 10:30 AM TO 01:00 PM
Total Marks: 70
Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) List all microwave bands and explain most important advantage of Microwave Communication.	03
	(b) Why TEM mode is not possible in Rectangular Wave guide?	04
	(c) Derive an Equation of $Z(l)$ of transmission line.	07
Q.2	(a) Define following terms: (a) Return loss (b) Propagation Constant (c) VSWR	03
	(b) Derive an equation of V_p and V_g and from that deduce the relation between them.	04
	(c) Derive field components in the wave guide for TM Mode	07
	OR	
	(c) For given wave guide dimensions, Identify the bands and find cut off frequencies $165.1 \text{ mm} \times 82.55 \text{ mm}$ and $22.9 \text{ mm} \times 10.2 \text{ mm}$.	07
Q.3	(a) What do you mean by S parameter? Why it is be used for analysis of Microwave networks?	03
	(b) How the microwave power can be taped from the wave guide for coupling using directional coupler.	04
	(c) Using S parameter explain properties of magic tee.	07
	OR	
Q.3	(a) Explain about medical application of microwave engineering.	03
	(b) Explain the working of an Isolator.	04
	(c) Explain about Microwave power measurement methods.	07
Q.4	(a) Explain in brief method of λ_g guide wavelength measurement.	03
	(b) Find out Z_{in} at the input of $\lambda/4$ long transmission line.	04
	(c) Explain in detail working of Gunn diode.	07
	OR	
Q.4	(a) Explain the effects of microwave on human body.	03
	(b) Explain the working of two cavity klystron Amplifier.	04
	(c) Explain in detail working of IMPATT diode.	07
Q.5	(a) Explain in brief how to measure microwave frequency?	03
	(b) Explain the working of TWTA amplifiers.	04
	(c) With necessary equation explain the working of a parametric amplifier	07
	OR	
Q.5	(a) Explain in brief microwave imaging.	03
	(b) Explain the working of Magnetron.	04
	(c) Explain the working of RADAR.	07
