Code No: RT32044 **R13** SET - 1

III B. Tech II Semester Supplementary Examinations, November -2018

MICROWAVE ENGINEERING

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	Define dominant and degenerative modes?	[4M]
	b)	List out the differences between Rectangular waveguides and Rectangular cavities?	[4M]
	c)	Define the function of Gyrator and Isolator?	[4M]
	d)	Explain the bunching process through Apple gate diagram in 2-cavity Klystron amplifier?	[4M]
	e)	Draw and List out the types of slow wave structures used in TWTs?	[3M]
	f)	List out the modes of operation of Gunn diode?	[3M]

PART -B

2	a)	Based on characteristic equation, Explain all the properties of Rectangular waveguide?	[8M]
	b)	A TE_{10} Wave at 10.0 GHz propagates in a rectangular Wave guide (a=2.5cm and b=1.25cm) filled with Teflon having ε_r =2.1. Determine the wave Impedance.	[8M]
3	a)	How are cavity resonators made with truncated wave guides? Explain?	[8M]
	b)	Derive the characteristic equation of a Circular waveguide?	[8M]
4	a)	Explain the design & Working principle of a Gyrator?	[8M]
	b)	Explain the design of Waveguide terminations?	[8M]
5	a)	Derive the L_{opt} required in 2-cavity Klystron to form a bunch?	[8M]
	b)	Derive the mode equation in Reflex Klystron Oscillator?	[8M]
6	a)	Draw and explain the working principle of a HTWT?	[8M]
	b)	Define M-type tubes? List out the techniques for Pi-mode separation?	[8M]
7		Explain i) RWH Theory ii) frequency Measurement	[16M]

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