Basavarajeswari Group of Institutions

BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT

(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

USN											Course Code	2	1	E	C	6	2

Sixth Semester B.E. Degree Examinations – September 2024
MICROWAVES AND ANTENNAS

Duration: 3 hrs **Max. Marks: 100**

Note: 1. Answer any* FIVE *full questions choosing ONE full Question from each Module.
2. Missing data, if any, may be suitably assumed

Q. No		Question	Marks	(RBTL:CO:PO)
		Module-1		
1.	**a.**	With a neat diagram explain in detail the construction and operation of reflex klystron and its characteristics.	**08**	(2 :1 : 1)
	b.	Explain classification of microwave frequencies.	**06**	(2 :1 : 1)
	c.	Derive transmission line equations.	**06**	(2 :1 : 1)
		OR		
2.	**a.**	With neat diagram explain operation of Gunn Diode oscillator.	**10**	(2 :1 : 1)
	b.	What are standing waves. Derive an expression for Transmission coefficient.	**10**	(2 :1 : 1)
		Module-2		
3.	**a.**	For a Two port network define various parameters in terms of Currents and voltages.	**10**	(2 :2 : 1)
	b.	Obtain S matrix representation of multiport network.	**10**	(2 :2 : 1)
		OR		
4.	**a.**	With a neat diagram explain the operation of precision type Phase shifter.	**10**	(2 :2 : 1)
	b.	Explain the characteristics of E-plane tee, obtain S-matrix representation.	**10**	(2 :2 : 1)
		Module-3		
5.	**a.**	With neat sketch explain the characteristics of Field and Power patterns.	**08**	(2 :3 : 1)
	b.	Find a) HPBW b) FNBW given $E(\theta) = \sin(\theta)$	**06**	(2 :3 : 1)
	c.	Define i) Radiation intensity ii) Beam Efficiency.	**06**	(2 :3 : 1)
		OR		
6.	**a.**	Find the Directivity of a radiation pattern given by $E(\theta) = \sin^2(\theta)$, $0 \leq \theta \leq 90$.	**10**	(2 :3 : 1)
	b.	With neat sketch discuss Short Electric dipole.	**10**	(2 :3 : 1)

Module-4

7.	**a.**	In Arrays of point sources derive the resultant field of two-point sources of same magnitude and same phase and plot the radiation pattern.	**10**	(2 :4 : 1)
	b.	Derive an expression for the resultant field of Linear array of n isotropic point sources.	**10**	(2 :4 : 1)

OR

8.	**a.**	With neat sketch explain different types of Smart antennas.	**12**	(2 :4 : 1)
	b.	Give the applications of smart antennas.	**08**	(2 :4 : 1)

Module-5

9.	**a.**	Explain the construction and working of Microstrip antennas.	**10**	(2 :5 : 1)
	b.	Discuss different feeding methods of Microstrip antennas.	**10**	(2 :5 : 1)

OR

10	**a.**	Explain the construction and working of Yagi Yuda antenna.	**10**	(2 :5 : 1)
	b.	Briefly discuss i) Log periodic antenna ii) Horn antenna	**10**	(2 :5 : 1)

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Note: (RBTL - Revised Bloom's Taxonomy Level: CO - Course Outcome: PI – Programme Outcome)