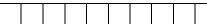
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GIET MAIN CAMPUS AUTONOMOUS GUNUPUR - 765022 B. Tech Degree Examinations, June – 2021 (Sixth Semester) **BECPC6020 - MICROWAVE THEORY AND TECHNIQUES** (Electronics and Communication Engineering) Time: 2 hrs Maximum: 50 Marks **Answer ALL Questions** The figures in the right hand margin indicate marks. **PART – A: (Multiple Choice Questions)** $(1 \times 10 = 10 \text{ Marks})$ Q.1. Answer ALL questions [CO#] [PO#] CO₂ a. On which of the following principle does Klystron operates PO 1 (i) Frequency Modulation (ii) Amplitude Modulation (iii) Velocity Modulation (iv) Pulse Modulation b. A space between two cavities in two cavity klystron is _____ CO 2 **PO** 1 (ii) Running space (i) Normal space (iii) Free space (iv) Drift space c. Magnetron is an _____ CO 2 **PO** 1 (i) Oscillator (ii) Amplifier (iii) Phase shifter (iv) Both phase shifter & amplifier d. Which one of the following device behaviour is governed by bulk effect? CO 1 PO 1 (i) PIN diode (ii) Tunnel diode (iv)IMPATT diode (iii)Gunn diode e. The material out of which PIN diode is made is: CO 1 PO 5 (i) Germanium (ii) Silicon (iii) GaAs (iv) None of the above f. Scattering matrix for a reciprocal network is: CO₄ PO 3 (ii) Skew symmetric (i) Identity matrix (iii) Unitary (iv) Symmetric g. Example of a non reciprocal device: CO 3 **PO** 1 (i) Circulator (ii) Magic-T hybrid (iii) Branch line coupler (iv) Wilkinson coupler h. The resonant frequency of a cavity resonator depends upon____ CO 2 PO 5 (i) The capacitor which tunes it (ii) Its physical dimensions (iv) The mode of operation (iii) Its electrical dimensions i. The remedy for the problem of "blind speed" is CO 2 **PO** 1 (i) Change in Doppler frequency (ii) Use of MTI (iii) Use of monopulse (iv) Variation of PRF j. In MTI radar, COHO operates CO 2 **PO** 1 (i) Station frequency (ii) Pulse repetition frequency (iii) At intermediate frequency (iv) At supply frequency

PART – B: (Short Answer Questions)		(2 x 5 = 10 Marks)		
Q.2. Answer ALL questions			[CO#]	[PO#]
a.	Compare O type and M type Tubes?		CO 2	PO 1
b.	Define Gunn Effect?		CO 1	PO 1
c.	What are the different Avalanche Transit Time Devices?		CO 1	PO 2
d.	Find the resonant frequency of an air-filled rectangular cavity resonant dimensions $a = 5$ cm, $b = 3$ cm and $d = 4$ cm?	or with	CO 3	PO 2
e.	List out some important applications of a radar system?		CO 4	PO 1

PART – C: (Long Answer Questions)

(6 x 5 = 30 Marks)

Answer ANY FIVE questions		Marks	[CO#]	[PO#]
3.	State the limitations of conventional tubes at microwave frequencies?	(6)	CO 2	PO2
4.	What is BWO? Explain its operation with a neat sketch?	(6)	CO 2	PO 2
5.	Discuss the principle of operation of Microwave Field Effect Transistors?	(6)	CO 1	PO 1
6.	Discuss the principle of operation of TRAPATT diode?	(6)	CO 1	PO 1
7.	Describe the working of H-plane Tee and state why it is called shunt Tee?	(6)	CO 3	PO 1
8.	Write short notes on: (i) Bends and Corners (ii) Attenuators (iii) Phase shifters.	(6)	CO 3	PO 2
9.	Explain the basic principle of Radar with neat block diagram?	(6)	CO 2	PO 2
10.	Explain with block diagram an FM-CW Radar using sideband super heterodyne	(6)	CO 2	PO 1
	Receiver			

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