C **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 97402

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2023

Seventh Semester

Electronics and Communication Engineering

19UEC702 - OPTICAL AND MICROWAVE COMMUNICATION

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Laser light is_____emission. CO1-U

   (a) Coherent (b) Stimulated (c) Spontaneous (d) Coherent and stimulated

2. The type of absorption loss in an optical fiber is_____ CO1-U

   (a) Intrinsic (b) Extrinsic (c) both(a) and (b) (d) none of these

3. A device used for coupling microwave energy is known as_____ CO2-U

   (a) Transmitter (b) Resonator (c) Waveguide (d) Loop

4. For the capacitors used in MMICs, the insulating dielectric films used is_____ CO2-U

   (a) Air (b) SiO (c) Titanium (d) GaAs

5. In π mode operation of magnetron, the spokes due to phase focusing effect rotate at an angular velocity corresponding to___ CO2-U

   (a) One pole/cycle (b) Two poles/cycle (c) Four poles/cycle (d) Six poles/cycle

PART – B (5 x 3= 15Marks)

6. Compare Meridional rays and Skewrays. CO1-U

7. A 100Km long optical fiber has an attenuation of 0.25db/Km. If 0.1mW of optical power is launched into the fiber. Determine the output optical power. CO3-App

8. Why is S-matrix used in microwave analysis? CO2-U

9. A Microstrip line has Cr=5.23, h=7mils, t=2.8mils, w=10mils. Find Zo? CO2 -App

10. List out the merits of direct heating calorimetric method. CO2-U

PART – C (5 x 16= 80Marks)

11.	(a)	Describe in detail about the construction and working of Edge emitting LED.	CO1-U	(16)
		Or		
	(b)	Explain the features of multimode and single mode step index fiber and compare them.	CO1-U	(16)
12.	(a)	Describe in detail about a couple of pre amplifiers that are few in a receiver.	CO1-U	(16)
		Or		
	(b)	Describe in detail about attenuation losses in optical fiber communication in detail.	CO1-U	(16)
13.	(a)	Can all three ports of a lossless reciprocal microwave component be matched? Likewise, prove	CO2-U	(16)
		Or		
	(b)	Describe the magic tee's working principle and how to derive the magic tee's S matrix.	CO2-U	(16)
14.	(a)	Discuss in detail about the phrase for the micro strip lines' quality factor.	CO2-U	(16)
		Or		
	(b)	Discuss in detail about the following (i) Monolithic microwave integrated circuit. (ii) Monolithic microwave integrated circuit, growth and Fabrication Techniques	CO2-U	(16)
15.	(a)	Describe the rectangular waveguide's role in the mathematical Formulation of the solid's dielectric constant measurement.	CO2-U	(16)
		Or		
	(b)	Explain in detail about the measurement of load impedance using the slotted line method.	CO2-U	(16)