

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024****Subject Code:3170314****Date:01-06-2024****Subject Name:LASER and Fiber Optics in Medical Technology****Time:02:30 PM TO 05:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Describe Snell's Law.	03
	(b) Draw a diagram of electromagnetic spectrum.	04
	(c) Explain: Cone of acceptance, numerical aperture, Absorption and Refraction of light.	07
Q.2	(a) Enlist various problems encountered in connection of fiber optic cables.	03
	(b) Discuss the propagation of light through transparent glass slab with neat labeled diagram.	04
	(c) Draw and explain the structure of Optical Fibre.	07
OR		
	(c) Write a short note on ND: YAG Laser.	07
Q.3	(a) Discuss about Medical applications of CO ₂ Laser.	03
	(b) Explain properties of Laser light.	04
	(c) Describe operation of LASER in detail.	07
OR		
Q.3	(a) What is Photo ablation?	03
	(b) Describe Video-endoscopy in brief.	04
	(c) Explain Laser-Assisted Diagnosis techniques.	07
Q.4	(a) Define: Biostimulation, Hyperthermia.	03
	(b) Discuss about Photodynamic therapy.	04
	(c) Write a short note on Laser interaction with Tissue.	07
OR		
Q.4	(a) What is Fluorescence endoscopy?	03
	(b) Discuss about distal end of endoscope.	04
	(c) Explain principle of Endoscopic ultrasound imaging system.	07
Q.5	(a) Give characteristics of fiber optic biomedical sensor.	03
	(b) Draw diagram of indirect fiber optic sensor system.	04
	(c) Write a short note on Fiber optic Laser system in Urology.	07
OR		
Q.5	(a) Enlist main characteristics of Common Endoscope.	03
	(b) Explain any one application of Direct Physical Sensors.	04
	(c) Discuss about Fiber optic Laser system in Oncology.	07
