

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2021****Subject Code:3170314****Date:29/12/2021****Subject Name:LASER and Fiber Optics in Medical Technology****Time:10:30 AM TO 01:00 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) Explain LASER coagulation.	03
	(b) Explain endoscopic accessories: forceps, snare, and microwave probe.	04
	(c) Explain structure of endoscope with its major parts.	07
Q.2	(a) Explain LASER welding of tissues.	03
	(b) Explain LASER hyperthermia.	04
	(c) Write a note on: Applications of LASERS in Detection of Plaque in Cardiology.	07
OR		
	(c) Write a note on: Applications of LASERS in diagnosis of cancer.	07
Q.3	(a) Discuss optical properties of tissues.	03
	(b) Discuss safety consideration of LASER.	04
	(c) Explain thermal interaction of LASER with tissues.	07
OR		
Q.3	(a) Explain spontaneous emission and stimulated emission.	03
	(b) Explain different LASER beam modes.	04
	(c) Write a note on dye LASER.	07
Q.4	(a) Write all properties of LASER light.	03
	(b) Discuss the beam divergence and beam focusing.	04
	(c) Write a note on Excimer LASER.	07
OR		
Q.4	(a) Explain the role of strength members in fiber optic cable.	03
	(b) What are the factors that needs to be considered for optical fiber designing? Explain each in detail.	04
	(c) Explain the process of optical fiber manufacturing with diagram.	07
Q.5	(a) What is mode? How modes can be calculated within optical fiber.	03
	(b) Explain 1) Step index fiber 2) Graded index fiber	04
	(c) Explain different bending losses associated with optical fiber with proper illustrations.	07
OR		
Q.5	(a) What is skew ray?	03
	(b) What is acceptance angle? Explain with its equation.	04
	(c) Explain Snell's law with diagram and equation.	07
