Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII(NEW) • EXAMINATION - WINTER 2016

Subject Code:21	70312	Date:25/1:	1/2016

Subject Name: Medical Optics (Department Elective - II)

Time: 10.30 AM to 1.00 PM Total Marks: 70

Instructions:

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.

Q.1	(a) (b)	Explain in detail propagation of light along straight transparent and bend slab. Explain the following terms with diagrams (i) single mode, multi mode fiber (ii) step index, graded index fibers.	07
Q.2	(a) (b)	Write a note on losses and dispersions in optical fiber. Elaborate the principle of LASER and briefly describe working principle of carbon dioxide LASER.	07 07
	(1-)	OR Differentiate between ordinary light source and LASED light source	07
	(b)	Differentiate between ordinary light source and LASER light source.	U /
Q.3	(a)	Discuss the therapy by thermal and non-thermal interaction between Lasers and Tissue.	07
	(b)	How diagnosis of cancer and plaque in cardiology are done with the help of LASER principles?	07
		OR	
Q.3	(a)	How does welding of tissue is achieved with LASER? Discuss few potential applications of laser welding.	07
	(b)	Along with spectral absorption of LASER in water and tissue, explain the principle of LASER interaction with tissue.	07
Q.4	(a)	Explain fundamentals of endoscopic imaging system in detail.	07
~··	(b)	Explain optical properties of tissue in detail.	07
	()	OR	
Q.4	(a)	State and explain the principle of endoscopic ultrasound imaging.	07
	(b)	Define the following terms (i) Ultrathin endoscope, (ii) Angioscope, (iii) Fluorescence endoscopy.	07
Q.5	(a)	Explain the principle of Fiberoptic biomedical sensors.	07
((b)	Discuss in detail fiber optic laser systems in ophthalmology. OR	07
Q.5	(a)	Discuss fundamentals of endoscopic therapy.	07
~	(b)	Write a note on fiber optic laser systems in urology.	07
