

CBCS SCHEME

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18BM742

Seventh Semester B.E. Degree Examination, Feb./Mar. 2022 Lasers and Optical Fibers in Medicine

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain the principles of interaction between Lasers and Materials. (12 Marks)
- b. Describe the therapy by thermal interaction between lasers and tissue. (08 Marks)

OR

- 2 a. Explain the photothermal mechanisms used in laser surgery. (10 Marks)
- b. Discuss the principles of laser assisted diagnostics. (10 Marks)

Module-2

- 3 a. Describe the fundamentals of optical fibers and principle of Total Internal Reflection. (10 Marks)
- b. Discuss any 10 optical properties of optical fibers. (10 Marks)

OR

- 4 a. With a neat diagram, explain the fabrication process of the optical fibers. (10 Marks)
- b. Describe the principle of power transmission through optical fibers. (10 Marks)

Module-3

- 5 a. Discuss the principles of non-ordered fiber-optic bundles. (12 Marks)
- b. With a neat diagram, explain the fundamentals of fiber-scopes. (08 Marks)

OR

- 6 a. Explain the principles of ordered fiber-optic bundles. (12 Marks)
- b. Describe the advances in fiber-optic imaging system. (08 Marks)

Module-4

- 7 a. Explain the principles of endoscopic imaging systems. (10 Marks)
- b. With neat diagram, describe the principle of endoscopic ultrasound imaging system. (10 Marks)

OR

- 8 a. Discuss the advances in the endoscopic diagnostics. (10 Marks)
- b. Explain the auxiliary mechanical devices and subsystems used in endoscopy. (10 Marks)

Module-5

- 9 a. Explain with diagram, the fiber-optic laser endoscopic system used in cardiology. (12 Marks)
- b. Discuss the laser lithotripsy technique using laser catheter. (08 Marks)

OR

- 10 a. With diagram, describe the HPD-PDT technique used in oncology. (10 Marks)
- b. Discuss the flow diagram for laser angioplasty. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.