

Reg. No. :

**Question Paper Code : 20532**

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2022.

Seventh Semester

Electronics and Instrumentation Engineering

EI 8075 — FIBRE OPTICS AND LASER INSTRUMENTATION

(Common to Electrical and Electronics Engineering/Instrumentation and Control Engineering)

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State Snell's Law?
2. Explain light propagation in fiber.
3. Mention the application of fiber optic sensors.
4. Differentiate intrinsic and extrinsic fiber optic sensor.
5. List the properties of Lasers.
6. Write briefly on semiconductor lasers.
7. Outline the concept of Trimming in Lasers.
8. List the application of LIDAR.
9. List the procedures in plastic surgery.
10. Distinguish between holography and photography.

PART B — (5 × 13 = 65 marks)

11. (a) Discuss the general block diagram of optic fiber communication system.

Or

- (b) Explain the performance requirement for an ideal optical source and an ideal detector.

12. (a) With schematic block diagram, explain the measurement of length using Lasers.

Or

- (b) Analyze the features of fiber optic sensors and point out the uses in the measurement of current and voltage.

13. (a) Sketch the energy band diagram and the constructional details of a Semiconductor laser and explain.

Or

- (b) Distinguish between conduction limited melting and key hole melting with a neat diagram.

14. (a) Illustrate three level and four level lasers and with a neat diagram.

Or

- (b) Discuss Mode locking with a neat diagram.

15. (a) Discuss material removal and vaporization using lasers.

Or

- (b) Elaborate the measurement of atmospheric Effect using lasers.

PART C — (1 × 15 = 15 marks)

Answer ONE questions.

16. (a) Critique on the laser treatments in medical applications in the field of  
(i) Oncology  
(ii) Gynaecology.

Or

- (b) Apply Holographic principle in construction and reconstruction of an image and explain in detail.