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Question Paper Code : 51541

B.E/B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Seventh Semester

Electronics and Instrumentation Engineering

**EI 2404/EI 74/EI 1354 A/IC 1002/10133 EI 704 – FIBRE OPTICS AND LASER
INSTRUMENTS**

**(Common to Sixth Semester – Instrumentation and Control Engineering and Electrical
and Electronics Engineering)**

(Regulations 2008/2010)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. What are the different types of optical fibres and their characteristics ?
2. Distinguish between intrinsic and extrinsic absorption.
3. What is an acoustic optic modulator ?
4. What is meant by fibre optic instrumentation system ?
5. State the characteristics of laser.
6. What are the advantages of gas laser ?
7. What is meant by active material in laser ?
8. Name any two uses of laser in industry.
9. Mention the components of hologram.
10. What is the principle of fiberoscope ?

PART – B (5 × 16 = 80 Marks)

11. (a) Explain how light propagates through step index and graded index fibre. (16)

OR

- (b) Discuss the different absorption and scattering losses in an optical fibre. (16)

12. (a) (i) Explain the role of optical fibers in the measurement of pressure. (10)

- (ii) Give an account on “Moire Fringes”. (6)

OR

- (b) (i) Explain the working principle of electro optic modulator with a neat sketch. (8)

- (ii) Explain the principle of laser for measurement of temperature. (8)

13. (a) Discuss the characteristics of lasers. With help of diagram explain the principle of three level and four level lasers. (6 + 5 + 5)

OR

- (b) Explain the construction and operation of liquid and solid laser with a neat diagram. (8 + 8)

14. (a) Describe the method for the measurement of

- (i) Acceleration and

- (ii) Current (2 × 8)

OR

- (b) Explain how laser is used in material processing and also explain laser heating process and laser trimming of material. (2 × 8)

15. (a) (i) Explain how the hologram is used in non-destructive testing. (12)

- (ii) What are the applications of hologram? (4)

OR

- (b) (i) Discuss any two medical applications of laser. (12)

- (ii) How is laser used for removal of tumors of vocal cords? (4)