

MIB
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Question Paper Code : 21434

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

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)

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the necessity of cladding for an optical fibre?
2. Mention any two required properties of light sources used in the optical fibre communication.
3. What is meant by fibre optic temperature sensor?
4. What are Moire fringes?
5. State the characteristics of laser.
6. An atom is stimulated from the state of energy of 1×10^{-34} J to an excited level of 7.62×10^{-34} J. What is the frequency of stimulating photon?
7. What is meant by active material in laser?
8. Name any two uses of laser in industry.
9. Distinguish between photography and holography.
10. What are the uses of laser in medicine?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss the various types optical fibres. (12)
(ii) What are the required properties of optical detectors? (4)

Or

- (b) (i) Explain the absorption and scattering losses in an optical fibre. (12)
(ii) Among different fibres which has the least dispersion? (4)
12. (a) (i) Explain the different types of fibre optic sensors. (12)
(ii) Why do we require modulation? (4)

Or

- (b) (i) Explain how the pressure and current can be measured by using an optical fibre. (12)
(ii) What are the advantages of optical fibre in communication? (4)
13. (a) (i) Describe the construction and working of a solid state laser. (12)
(ii) What is meant by laser modes? (4)

Or

- (b) (i) Describe the construction and working semiconductor laser. (12)
(ii) Explain the term "cavity damping". (4)
14. (a) (i) Explain how the current and distance can measured by using laser. (12)
(ii) What is meant by laser melting? (4)

Or

- (b) (i) Explain the different steps involved in laser materials processing. (12)
(ii) What are the advantages of laser heating? (4)
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 laser is used for removal of tumors of vocal cards? (4)