C 15936 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, MAY 2011

AI 04 803—OPTO ELECTRONIC INSTRUMENTATION

Time : Three Hours Maximum : 100 Marks

I. (a) Explain the energy band diagram and applications of Pin diode in detail.

(b) Differentiate LED from LCD. Explain the difference.

(c) What are SLM and MLM in Lasers ? Explain in detail.

(d) What is fiber preform ? Explain in detail.

(e) Define and explain.

(i) TIR.

(ii) Brewster angle.

(f) Write a technical note on single mode grader Index fiber.

(g) Explain the procedure for alternation measurement using Insertion loss method.

(h) List and explain the types of fiber Optic Sensors.

(8 × 5 = 40 marks)

II. (a) (i) Explain the various types of optical modulators in detail. (7 marks)

(ii) Explain the construction and Principle of Operation of LED and LCD in detail.

(8 marks)

(b) Explain the principle of operation and applications of optical spectrum analyzer with a neat block diagram in detail.

III. (a) (i) Derive Einstein Relation for Lasing. (7 marks)

(ii) Derive the threshold current density for Lasing in lasers. (8 marks)

Or

(b) Explain the following fabrication processes in detail with neat sketches : —

(i) MCVD.

(ii) VPO.

(7 + 8 = 15 marks)

Turn over

IV. (a) Explain the principle of operation of Gas laser and Ruby laser with neat diagrams.

Or

(b) (i) Explain the principle and applications of holography in detail. (7 marks)

(ii) Give an account on "Fiber drawing apparatus". (8 marks)

V. (a) Explain the procedure for fiber dispersion measurement with a neat block diagram

Or

(b) Write technical notes on :

(i) OTDR.

(ii) Fiber Splicers.

(iii) Optical telemetry.

(3 × 5 = 15 marks)