C 46560

Name..

Reg. No.......................................

EIGHTH SEMESTER B.TECH (ENGINEERING) DEGREE EXAMINATION JUNE 2008

EC 2K 802—OPTICAL COMMUNICATION

Time : Three Hours   Maximum : 100 Marks

I. (a) What is mode filter in a typical optical bench ? Explain.

   (b) Write standard wave equations. Explain its applications to fiber diode.

   (c) Differentiate LED from LASER diode.

   (d) Explain the operating principle of a simple pn photo detector with a neat sketch.

   (e) Define shot noise and Thermal noise in an optical receiver.

   (f) Explain the effect of ISI in multimode fibers with neat sketches.

   (g) Explain the principle of operation of Brillouin amplifier with a neat sketch.

   (h) Give an account on WDM based devices.

$(8 \times 5 = 40$ marks)

II. (a) (i) Derive standard Maxwell's equations.   (7 marks)

      (ii) Differentiate single mode fiber from multimode fiber.   (8 marks)

Or

   (b) (i) Explain the attenuation mechanisms in optical fibres.   (7 marks)

      (ii) Differentiate Intermoral dispersion from Intramodel dispersion.   (8 marks)

III. (a) (i) Explain the principle of operation of a semiconductor laser with a neat diagram.

(7 marks)

      (ii) Explain the detection principles of a APD with a neat diagram.   (8 marks)

IV. (a) Explain the principle of operation of a Optical heterodyne system with a neat block diagram.

Or

   (b) Explain in detail the PSK and FSK modulation formats. Derive the expressions for probability of error.

V. (a) Explain the principle of operation of a EDFA with a neat sketch. Derive an expression for Gain.

Or

   (b) Write short notes on :

      1. Intermodulation effects.   (7 marks)

      2. Principle of fiber raman amplifier.   (8 marks)

$(4 \times 15 = 60$ marks)