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Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
JUNE 2009

Engineering

EC 2K 802—OPTICAL COMMUNICATION

Time : Three Hours Maximum : 100 Marks

I. (a) What is normalized frequency ? Explain its significance.

(b) Explain the non-linear self phase modulation effect in single mode fiber.

(c) Differentiate LED from LASER.

(d) Enumerate and explain the requirements of an ideal optical detector.

(e) What is ISI ? Explain the effect of ISI in Multimode fibers.

(f) Explain the principle of homodyne detection with a sketch.

(g) Explain the potential applications of optical amplifiers.

(h) What is ASE ? Explain.

(8 × 5 = 40 marks)

II. (a) (i) Explain the types of fiber misalignments with neat sketches. (7 marks)

(ii) Explain the following :

(1) Mode scrambler ; (2) V number.

(iii) Mode volume.

(3 + 3 + 2 = 8 marks)

Or

(b) Explain in detail the characteristics and applications of dispersion shifted and dispension flattened fibers.

III. (a) (i) Explain the switching and modulation characteristics of a LED. (7 marks)

(ii) Differentiate spontaneous emmission from stimulated emission. (8 marks)

Or

(b) Write technical notes on :

(i) APD principle. (7 marks)

(ii) Noise in detection. (8 marks)

Turn over

IV. (a) (i) Explain the principle of a coherent optical system with a neat sketch. (7 marks)

(ii) Explain DPSK and ASK modulation Formats. (8 marks)

Or

(b) Explain the following :

(i) Principle of equalization. (7 marks)

(ii) Coherent system using FPSK modulation. (8 marks)

V. (a) Explain the principles of operation of fiber raman amplifier ; with a neat diagram. Device an expression for gain.

Or

(b) (i) Explain the potential applications of optical amplifiers. (7 marks)

(ii) Brillouin amplifier principle. (8 marks)

[4 × 15 = 60 marks]