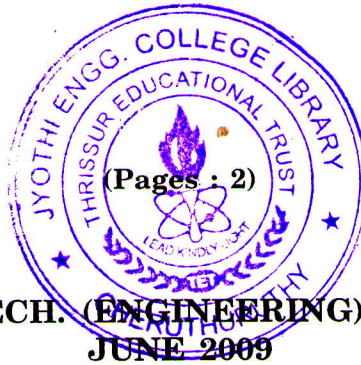


**C 56365**



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.  
(ii) Explain the following :  
(1) Mode scrambler ; (2) V number.  
(iii) Mode volume.

(7 marks)

(3 + 3 + 2 = 8 marks)

Or

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

- III. (a) (i) Explain the switching and modulation characteristics of a LED.  
(ii) Differentiate spontaneous emission from stimulated emission.

(7 marks)

(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. Devise 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]