

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI • EXAMINATION – WINTER • 2014****Subject Code: 161005****Date: 03-12-2014****Subject Name: Optical Communication****Time: 02:30 pm - 05:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Explain the elements of an optical fiber transmission link with the functional description of each block. **07**  
(b) Mention the advantages and applications of optical fiber communications. **07**
- Q.2** (a) Compare step index fibers and graded index fibers. **07**  
(b) Compare Ray theory and Electromagnetic mode theory for light propagation through fiber. **07**
- OR**
- (b) Explain the fiber fabrication technique along with the schematic of a fiber drawing apparatus. **07**
- Q.3** (a) Explain the principle, characteristics and operation of avalanche photodiode. **07**  
(b) List the types of Light Emitting Diodes used in optical system and explain any one of them with required figure. **07**
- OR**
- Q.3** (a) Discuss the various dispersion mechanisms that contribute to pulse broadening during the fiber transmission. **07**  
(b) Discuss briefly the distributed-feedback(DFB) laser diode with neat sketch. **07**
- Q.4** (a) Write the differences between LEDs and LASERs. **07**  
(b) Discuss optical power loss model for a point to point link. **07**
- OR**
- Q.4** (a) What are Eye diagrams? Explain different eye pattern features with diagrams. **07**  
(b) Explain (1) fusion splicing, (2) V-groove splicing. **07**
- Q.5** (a) Explain Semiconductor optical Amplifiers (SOAS). **07**  
(b) Write short notes on Synchronous Optical Fiber Networks(SONET). **07**
- OR**
- Q.5** (a) Explain Optical Time Domain Reflectometry (OTDR) method with its benefits over other techniques. **07**  
(b) Write a brief note on Optical Couplers. **07**

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