

(3 Hours)

[Total Marks: 80]

- N.B.** (1) **Question No.1** is compulsory  
 (2) **Attempt** any **three** questions from remaining questions  
 (3) **Figures** to right indicate **full** marks

1. a) Explain the advantages of OTN over SONET. **05**  
 b) Compare Intermodal and Intramodal Dispersion **05**  
 c) Define Critical Angle, Acceptance Angle and Numerical Aperture and quantum efficiency **05**  
 d) What is fiber bragg gratings? Give its applications. **05**
2. a) Explain the Linear and Nonlinear scattering in optical fiber **10**  
 b) A typical relative refractive index difference for an optical fiber designed for long distance transmission is 1%. Estimate NA and solid acceptance angle in the air for the fiber when the core index is 1.46. Further calculate the critical angle at the core cladding interface within the fiber. It may be assumed that the concept of geometric optics hold for the fiber **10**
3. a) Explain modified chemical vapour phase deposition method of fiber fabrication. **10**  
 b) What is optical amplifier? Explain in brief its different types **10**
4. a) Explain in detail working principle of Avalanche photodetector. Explain its merits and demerits **10**  
 b) Explain SONET architecture in detail. Draw the Frame of SONET and determine its basic rate **10**
5. a) Explain in Bit interleaving and packet interleaving techniques used in OTDM **10**  
 b) Explain in brief different types of PON architecture. **10**
6. Write short notes on any two **20**
  - a) Optical safety
  - b) Wavelength stabilization
  - c) Crosstalk in optical system
  - d) Network Management functions.

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