

(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.
