Paper / Subject Code: 42403 / Optical Communication and Networks

Q. P. Code: 36057

(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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