(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 and disadvantages of SONET/SDH   05
   b) Compare Linear and Nonlinear Scattering   05
   c) What is the Numerical Aperture of Fiber? Give its significance   05
   d) What is Optical Circulator? Give its applications.   05

2. a) Explain in brief intermodal and intramodal dispersion in fiber   10

   b) A 6Km optical link consist of multimode step index fiber with a core refractive 10
      index of 1.5 and relative refractive index difference of 1%. Estimate
      (i) Delay difference between slowest and fastest modes at the fiber output
      (ii) RMS pulse spreading due to intermodal dispersion on the link
      (iii) Maximum bit rate that may be obtained without substantial errors on the link
          assuming only intermodal dispersion
      (iv) Bandwidth Length product corresponding to (iii)

3. a) What are the different fiber fabrication methods? Explain double crucible method 10
      of fiber fabrication.

   b) What is optical amplifier? Compare different types of optical amplifiers   10

4. a) Explain in detail working principle of PIN photodetector. Explain its merits
      and demerits   10

   b) What is OTN? Draw and explain its frame structure   10

5. a) What are the advantages of OTDM? Explain its working principle   10

   b) Discuss the term power penalty with suitable system model   10

6. Write short notes on any two   20

   a) Passive optical Network
   b) Dispersion compensation
   c) Performance and fault management in optical network
   d) Optical safety

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