

[Time: Three Hours]

[Marks:80]

- N.B.: (1) Question No. 1 is compulsory.
- (2) Solve any three questions from the remaining five questions
- (3) Figures to the right indicate full marks
- (4) Assume suitable data wherever necessary, with proper justification.

- Q.1 Attempt any 5 questions [20]
- Explain three operating windows in optical communication.
 - Define – Group Velocity Dispersion (GVD)
 - What is fiber Bragg grating? Explain its application.
 - Explain self-phase and cross phase modulation
 - Compare stimulated Raman scattering and stimulated Brillouin scattering.
 - What are the three topologies used for fiber optical network?
- Q.2 a) Explain different phenomena responsible for signal degradation as the light wave propagates through an optical fiber. [10]
- b) Explain working of vertical cavity surface emitting laser. [10]
- Q.3 a) Lists properties of solitons and explain Loss managed solitons in detail [10]
- b) Lists the advantages of optical amplifier also explain the working of EDFA. [10]
- Q.4 a) Explain dispersion compensating fiber in details. [10]
- b) Explain first passage model and blocking model for statistical wavelength routing network. [10]
- Q.5 a) Compare SONET and OTN network. [10]
- b) List and explain different Light path topologies, and write the equations for number of wavelength needed to support the traffic and router ports required. [10]
- Q.6 Short notes on: (Attempt any two) [20]
- Optical MEMS
 - Unidirectional and bi directional WDM system.
 - Metro network
 - Optical switching.