

- N.B.: (1) Question No. 1 is compulsory.
- (2) Solve any **three questions** from the **remaining five**
- (3) Figures to the right indicate full marks
- (4) Assume suitable data if necessary and mention the same in answer sheet.
- Q.1 Attempt any 5 questions [20]
- a) Compare stimulated Raman scattering and stimulated Brillouin scattering
 - b) Explain fiber Bragg grating.
 - c) Explain working principle of optical modulator.
 - d) What is unidirectional and bidirectional WDM system.
 - e) Explain dispersion compensating fiber.
 - f) Explain array waveguide grating.
- Q.2 a) Explain different phenomena responsible for signal degradation as the light wave propagates through an optical fiber. [10]
- b) Compare Semiconductor optical amplifier with erbium doped fiber amplifier and Raman amplifier [10]
- Q.3 a) Lists properties of solitons and explain Loss managed solitons in detail [10]
- b) Explain resonant cavity Enhanced (RCE) in details. [10]
- Q.4 a) Explain frequency chirping in details. [10]
- b). Explain first passage model and blocking model for statistical wavelength routing network. [10]
- Q.5 a) What is optical transport network (OTN)? Explain OTN frame structure in detail. [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]
- a) Optical MEMS
 - b) Four wave mixing.
 - c) Ring network
 - d) Optical Cross connect.
