

extra,

Time: 3 hours

Marks: 80

- 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.
