

VII - EL
OFC

6/6/16

QP Code : 31544

(3 Hours)

[Total Marks : 80

Instruction to the candidate if any :-

N.B.

- 1) Question No-1 is Compulsory.
- 2) Attempt any Three (03) Questions from remaining Five (05) Questions.
- 3) Assume suitable data where ever necessary.

Q. No.

Marks.

Q.1

Attempt the following Questions(Any 4)

- a) Total Internal Reflection at the outer edge of the core-cladding? 5
 - b) What do you mean by LP (Linearly Polarized) wave, State difference between LP & circularly polarized wave? 5
 - c) Discuss basic block Diagram of Optical communication 5
 - d) Explain the different types of losses in optical fiber communication 5
 - e) Compare Dark current & optical current in Semiconductor 5
 - f) What is Optical Transport network (OTN) 5
- Q.2(a) Explain Working of PIN photo diode, Advantages of APD w.r.to Gain, & Responsivity of diode 8
- Q.2(b) For GIF prove that $M = \frac{\alpha}{(\alpha T^2)} a^2 k^2 n_1^2 \Delta$ 6
- Q.2(c) Explain with neat sketch the two categories of front end amplifiers, Discuss the possible sources of noise in optical fiber Receiver 6
- Q.3(a) Explain the different types of losses in optical fiber communication, Give the various factors responsible for optical signal attenuation & Dispersion 8
- Q.3(b) Explain dispersion losses in an optical fiber, How transmission rate calculated in dispersion 6
- Q.3(c) Name five connectors used in optical fiber communication, State the difference between couplers and connectors 6
- Q.4(a) Define the quantum efficiency and responsivity of photo detector, Derive an expression for the responsivity of Intrinsic photo detector 8
- Q.4(b) Explain with block schematic of optical fiber soliton transmission system with optical soliton pulses (i) collision of two solitons (ii) Four stable solitons at safe separation distance. 6
- Q.4(c) Difference between following term in context with optical communication (i) Optical Source & Optical Detector (ii) Coherent and Non coherent optical transmission 6
- Q.5(a) Describe the structure and operation of OTDR, Explain loss measurement by OTDR 8
- Q.5(b) Explain the term protocol and Internet protocol (IP), using OSI reference model discuss implementation aspect of the (i) SONET (ii) DWDM 6
- Q.5(c) Explain with components a typical WDM link and some performance measurement parameter of user interest. 6
- Q.6 Write short note on (any 4): 20
- (a) Optical Coupler and Application
 - (b) SNR & Modifications of SNR for photodiode
 - (c) Optical safety & Service Interface
 - (d) Optical Switches
 - (e) SONET/SDH