

8E4090**8E4090**

B.Tech. VIII Semester (Old/Back) Examination, April/May - 2017
Electronics & Communication Engg.
8EC3 (O) Optical Communication

Time : 3 Hours**Maximum Marks : 80****Min. Passing Marks : 26****Instructions to the Candidates:**

Attempt any **five** questions, selecting **one** question from **each** unit. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) Explain the difference between single and multi mode fibers in detail? (8)
- b) What is difference between Intra model dispersion and Inter model dispersion? (8)

OR

1. a) Explain Plasma Activated chemical Vapor deposition (PEVD) process for optical fiber manufacturing and what are the merits of PEVD? (8)
- b) Define : (4×2=8)
 - i) Snell's law
 - ii) Acceptance angle
 - iii) Numerical aperture
 - iv) acceptance cone.

Unit - II

2. a) Compare the properties of LASER diode and Light emitting diode (LED) used for optical communication? (8)
- b) Explain the population inversion and single mode process in LASER? (8)

OR

2. a) Explain necessary requirements of an optical sources used for the purpose of optical communication? (8)
- b) What is the difference between a surface emitting LED and an edge emitting LED? (8)

Unit - III

3. a) Explain the quantum efficiency and responsivity of a photodiode. Determine the wavelength at which quantum efficiency and responsivity are equal? (10)
- b) Write applications of Avalanche photo diode (APD)? (6)

OR

3. a) Define the following : (4×2=8)
- i) Dark-current noise
 - ii) Thermal noise
 - iii) Signal to Noise ratio (SNR) in APD (Avalanche photodiode)
 - iv) Noise equivalent power (NEP)
- b) Write advantages and disadvantages of Avalanche photodiode? (8)

Unit - IV

4. a) Explain various types of splices with neat diagram in fiber communication? (8)
- b) Explain various types of optical couplers? (8)

OR

4. a) Explain Losses in couplers? (8)
- b) Explain four basic components used in optical connectors? (8)

Unit - V

5. a) What are the methods of refractive index measurement explain one of them? (8)
- b) Explain the method (any one) of Numerical Aperture (NA) measurement? (8)

OR

5. Write short note on (any two) : (8+8=16)
- i) Fiber attenuation.
 - ii) Fiber dispersion.
 - iii) Frequency domain measurement in optical fiber.

