

3E2076

Roll No. _____

[Total No. of Pages : 2]

3E2076

B.Tech. IIIrd Semester (Main/Back) Scheme Examination, Feb. - 2011

Computer Engineering & Information Technology

3IT6.1 & 3CS6.1 Optical Communication

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 24

Instructions to 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 may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Unit - I

1. a) Explain the classification (types) of fiber and compare it. (8)
- b) Explain the different type of losses in fiber optic communication. (8)

OR

- a) Explain the inter and intra modal dispersion and how we can minimized the dispersion.
- b) A step index (SI) fiber has core and cladding refractive index are 1.53 and 1.50 respectively and with core radius of 50 μ m operating at 1500 nm. calculate critical angle, numerical aperture and number of modes propagated in fiber.(16)

Unit - II

2. Explain the construction, material and working of (LED) light emitting diode. Derive the expression of power generated by LED. Write the advantages and disadvantages of LASER over LED. (16)

OR

- a) Explain the principle of LASER. Write the significance of hetro junction over homo junction. (10)
- b) Calculate the internal quantum efficiency for LED whose radiative and non radiative life time are 2.5 ms and 60 m sec respectively. (6)

[Contd....

Unit - III

3. a) Explain construction and working of PIN photo diode. Write the characteristic of good optical detectors. (10)
- b) Compare PIN and Avalanche photo diode. (6)

OR

- a) Explain types of detector noise. (6)
- b) A silicon APD has quantum efficiency of 65% at a wave length of 850 nm. Suppose 0.3mw of optical power process a multiplied photo current of $10 \mu A$. Calculate responsivity and multiplication factor. (10)

Unit - IV

4. Write in short :
- a) Link design calculation
- b) Fiber splice. (10+6=16)

OR

Write in short

- a) Wave length division multiplexing WDM
- b) Fiber misalignments. (10+6=16)

Unit - V

5. With neat sketch explain the measurement of fiber attenuation and Numerical aperture. (16)

OR

With neat sketch explain the measurement of fiber diameter and Dispersion. (16)