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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)

(1)

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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 μA. Calculate responstivity 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)**