M 26862

Reg. No. : ....

Name : ....

VIII Semester B.Tech. Degree (Reg./Sup. – Including Part Time) Examination, April 2015
(2007 Admn. Onwards)
PT 2K6/2K6 EC 802 – OPTICAL COMMUNICATION

Time : 3 Hours   Max. Marks : 100

I. a) Explain the structure of optical fiber.   **5**

    b) Define MFD. Explain its importance in optical fiber.   **5**

    c) What are the conditions for laser action ?   **5**

    d) A silicon APD has a quantum efficiency of 65% at a wavelength of 900 nm. Suppose $0.5\,\mu W$ of optical power produces a multiplied photocurrent on $10\mu A$. Find the multiplication factor M.   **5**

    e) Define quantum limit and receiver sensitivity.   **5**

    f) Give the principle of operation of homodyne detection.   **5**

    g) Give the architecture of EDFA.   **5**

    h) Describe the transmission formats of SONET/SDH.   **5**

                                                                   (8×5=40)

II. a) Explain the attenuation mechanism in optical fiber.   **15**
                      OR

    b) What is dispersion ? What are the factors contributing to dispersion ?   **15**

III. a) Explain the principle of emission of light from LED. Give the structure of LED. **15**
                      OR

    b) 1) Derive the threshold condition for laser action.   **7**

       2) Obtain the signal to noise ratio at the input of amplifier.   **8**

IV. a) Briefly explain the different heterodyne coherent detection schemes.   **15**
                      OR

    b) Explain the nonlinear effects in fiber propagation.   **15**

V. a) Explain semiconductor optical amplifier.   **15**
                      OR

    b) Write notes on SONET/SDH Networks.   **15**

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