Total No. of Questions : 10] [Total No. of Printed Pages : 3

Roll No. .....

EC–701

B. E. (Seventh Semester)
EXAMINATION, Dec., 2011

(Electronics & Communication Engg. Branch)

OPTICAL COMMUNICATION

(EC – 701)

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt *one* question from each Unit. All questions carry equal marks.

Unit – I

1. (a) What is normalised frequency ? Derive its expression.

   (b) Calculate the numerical aperture of step index fiber having $n_1 = 1 \cdot 48$ and $n_2 = 1 \cdot 46$. What is the maximum entrance angle $Q_{0\,(max)}$ for this fiber if the outer medium is air with $n = 1$? Also derive the expression used.

Or

2. (a) Explain the MCVD technique of fiber fabrication.

   (b) Explain the assembly of fiber optic cable.

P. T. O.

Unit – II

3. (a) With the help of schematic diagram explain surface emitting LED.

   (b) What is the resonant frequency of laser ? Derive the expression of wavelength spacing between two modes.

Or

4. (a) How is modulation of laser diode done ?

   (b) Explain the different optical fiber connectors used.

Unit – III

5. (a) With the help of equivalent circuit explain the working of APD.

   (b) A given silicon APP has a quantum efficiency of 65% at a wavelength of 900 nm. Suppose $0 \cdot 50 \mu$ W of optical power produces a multiplied photocurrent of 10μ A. Find the multiplication factor.

Or

6. (a) Explain what is intermodal dispersion and how it could be reduced.

   (b) Explain the principle of working of dispersion flattened fibers.

Unit – IV

7. (a) How is eye pattern useful in analysing the performance of optical transmission ?

   (b) What is homodyne detection ?

Or

8. Explain in detail the link power budget.

Unit – V

9. (a) Explain the working principle of passive optical star coupler.

   (b) Explain the working principle of EDFA.

Or

10. Write short notes on the following :

   (a) MEMS

   (b) Tunable optical filters