Exam. Code: 0930
Sub. Code: 33674

2015

B.E. (Electronics and Communication Engineering)

Sixth Semester

EC-602: Fiber Optic Communication System

Time allowed: 3 Hours Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Attempt the following:-

a) Differentiate between db and dBm.

b) Methods of fiber splicing.

c) Compare inter modal and intamodal dispersion in optical fibers.

d) Differentiate between avalanche photo diode and p-i-n photodiode.

e) Free space optics. (5x2)

UNIT - I

II. a) Draw the basic architecture of a modern communication system. Explain how use of optical carrier provides excessive bandwidth for high capacity data transmission.

b) Calculate carrier frequency for optical communication system operating at 1.55 and 1.3 micro meters? (2x5)

III. a) Differentiate between critical angle and acceptance angle.

b) What should be the profile parameter for getting optimum results in case of graded index fiber? Show graphically variation of refractive index of core for graded index fibers and compare that with step index fibers. (2x5)

IV. a) What are the fiber bending losses and explain the factors that can keep these losses low.

b) Compare the threshold power density for Stimulated Brillion Scattering and Stimulated Raman Scattering. (2x5)

UNIT - II

V. a)Prove that the 3dB optical bandwidth of a LED is related to the 3 dB electrical bandwidth by the relation $f_{3dB}(\text{optical}) = 3^{1/2} f_{3dB}(\text{electrical})$

b) Differentiate between pn and p-i-n photodiodes . (2x5)

P.T.O.

VI. a) Explain the criterion that differentiates a light wave system as dispersion limited or loss limited system.

b) Explain the OSNR and eye diagram as system performance parameters. (2x5)

VII. Write short note on:-

a) Optical splitter (2x5)

b) Intensity modulated sensors

x-x-x