

2056

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

1. Attempt the following:-

- a) Calculate Carrier Frequency for Optical Communication System operating at 1.5 micro meters.
- b) Explain fusion splicing method.
- c) How does non-linear effects affect the signal propagation in optical fiber?
- d) Explain the eye diagram and BER as system performance parameters.
- e) What is the principle behind EDFA? (5x2)

UNIT - I

2. a) Draw the basic architecture of a modern optical communication system. Explain how use of optical carrier provides excessive bandwidth for high capacity data transmission.
b) The fiber has an acceptance angle of 30 degree and core index of 1.4 calculate refractive index of cladding. (2x5)
3. a) Explain the basic laws that govern light to be transmitted through the Optical Communication System?
b) Differentiate between single mode and multimode fiber. (2x5)
4. a) A multimode fiber with 50 micro meter core diameter is designed to limit the intermodal dispersion to 10ns/km. What is the numerical aperture of this fiber? What is the limiting bit rate for transmission over 12 km at 0.88 micro meters? Assume Refractive index of cladding as 1.44.
b) Output power is not directly proportional to input power in optical fibers and disproportion attenuation occurs at high optical power level. Explain in detail the phenomena responsible for it? (2x5)

P.T.O.

(2)

UNIT - II

5. a) Compare p-i-n photodiode with that of Avalanche Photodiode.
b) Calculate the responsivity of a p-i-n photodiode at 1.3 and 1.55 micro meter if the quantum efficiency is 80%. Why is photodiode more responsive at 1.55 micro meters? (2x5)
6. a) How does point to point links different from multichannel systems?
b) Explain the OSNR, eye diagram and BER as system performance parameters. (2x5)
7. Write short note on:-
a) Intensity modulated Optical fiber sensors
b) Free space optics (2x5)

x-x-x