

Total No. of Questions : 8]

SEAT No. :

PC2421

[Total No. of Pages : 2

[6354] 541

B.E. (E&TC)

FIBER OPTIC COMMUNICATION
(2019 Pattern) (Semester - VIII) (404190)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8
- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

- Q1)** a) What are the requirements of material selection for photodetectors. [5]
b) Draw the structure of APD and explain its working. List its advantages and drawbacks. [6]
c) Explain different types of noise in the receiver. [6]

OR

- Q2)** a) Draw structure of p-i-n photodiode and explain its operation in brief. Plot the responsivity curve as function of wavelength for p-i-n photodiodes. [6]
b) A given APD has a quantum efficiency of 65% at a wavelength of 900 nm. Suppose 0.5 micro watt of optical power produces a multiplied photocurrent of 10 micro A. Find multiplication factor. [6]
c) Explain receiver structure in detail. [5]

- Q3)** a) Let the data rate of 20mb/s and BER of 10^{-9} . For the receiver PIN photodiode operating at 850 nm, the required receiver input signal is -42dBm. The LED is used as a source can couple 50uW (-13dBm) average optical power into a fiber flylead with a 50 um core diameter. Assume 1dB loss occurs when the fiber flylead is connected to the cable and another 1dB connector loss at the cable-photo detector interface. System margin of 6dB. Let attenuation per km is 3.5dB/km. Estimate link length. [7]
b) Write short note on optical coupler, circulator and isolator. [6]
c) Illustrate fiber grating with the help of a neat diagram. [5]

OR

P.T.O.