(2) BE - sem - VIII - old - EXTC - OFC

24/5/16

Q.P. Code : 629600

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question No.1 is compulsory.
(2) Attempt any four questions from remaining six questions.
(3) Assume suitable data wherever necessary, justify the same.
(4) Figures to the right indicate full marks.

1. Answer the following in brief: **20**
   (a) State the spectral band designations used in optical fiber communication.
   (b) What do you mean by optical waveguide? How it is different from Electrical waveguide?
   (c) What are direct and indirect semiconductors? Which types are suitable to be used as optical sources and detectors.
   (d) Discuss the possible sources of noise in optical receivers.

2. (a) Draw refractive index profile of a graded index fiber and show with neat diagram transmission of light through this fiber. Explain how graded index fiber has transmission bit rate much higher than multimode step index fiber. **10**
   (b) What do you understand by degenerating modes in step index fiber? **5**
   (c) What is the difference between coherent and non-coherent optical transmission? **5**

3. (a) Explain link power budget what is the significance of rise time budget? **10**
   (b) List the important factors responsible for power loss in optical fiber explain each factor in detail. **10**

4. (a) Draw and explain structure of APD along with electrical field profile in the various regions. Why it is also called RAPD. **10**
   (b) Explain any one fiber fabrication process in detail with a neat diagram. **10**

5. (a) Explain with neat sketches fiber splicing technique. Enlist the desirable requirements of a good fiber connector. **10**

   (b) A multimode graded index fiber exhibits total pulse broadening of 0.1μsec used over a distance of 12km. Calcualte: **10**

   (i) The maximum possible B.W.on the link assuming ISI.

   (ii) Pulse broadening per unit length.

   (iii) The bandwidth length product of the fibers.

6. (a) What is the basic principle on which optical sources work? Explain in brief operation of LASER. **10**

   (b) Describe the different types of preamplifiers used in optical receivers. **10**

7. Write short notes on any four: **20**

   (a) WDM in optical fiber communication.

   (b) Bending losses.

   (c) OTDR.

   (d) Optical Modulators.

   (e) Double heterojunction LED.