

24443

B.Tech. 7th Semester (F) Scheme (ECE) Examination,

December-2018

OPTICAL COMMUNICATION

Paper-ECE-415-F

*Time allowed : 3 hours*                      *[Maximum marks : 100]*

*Note : Question no. 1 is compulsory and attempt any one question from each section.*

1. Write short notes on the following :
  - (a) Advantages of optical communication
  - (b) Absorption Loss
  - (c) LED Vs LASER
  - (d) APD

**Section-A**

2. (a) Draw the block diagram of optical communication.                      10  
(b) Calculate the refractive Index of the core and cladding of a fiber whose  $NA = 0.204$  and  $\Delta=0.01$ .                      10
3. (a) What is the basics of transmission of light rays ?                      10  
(b) Derive the expression for  $NA$ ,  $\phi_c$ , and acceptance angle.                      10

( 2 )

24443

**Section-B**

4. Describe various types of losses in optical fiber in detail. 20
5. (a) Compare Intramodal and Intermodal dispersion. 10  
(b) What are the types of couplers and connectors? 10

**Section-C**

6. Describe various characteristics of LED in detail. 20
7. (a) Explain basic principle of Laser action in semi conductor. 10  
(b) Describe various Laser structures in detail. 10

**Section-D**

8. (a) What is the principle of optical detection? 10  
(b) Define characteristics of optical detectors. 10
9. Write short notes on : 20  
(a) APD design  
(b) PIN photodetector