

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHT

TEST-3 (2021)

B.TECH (VII SEMESTER)

COURSE CODE: 18B1WPH 732

MAX.MARKS: 35

COURSE NAME: OPTICAL FIBER NETWORK DESIGN

COURSE CREDITS: 3 (3-0-0)

MAX. TIME: 2 HRS

*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means..*

1. (a) What is cutoff wavelength in an optical fiber? Calculate cutoff wavelength of a single mode 8/120 fiber with core index of 1.467 and fractional index of 2.3%.  
(b) On the basis of NA and V parameter, how can we differentiate step index and graded index fibers.  
(3+2)
2. Calculate the number of modes in a 50/125 graded index fiber having a circular index ( $g=2$ ), core index 1.485, cladding index 1.461 at an operating wave length 0.820 micrometers. How will the number of modes change if the wavelength is increased by 480 nm?  
(3)
3. What is an FDDI network. Using Basic Block Diagrams, Explain the working of PHY and PMD layers of FDDI network?  
(2+2)
4. Draw the structural designs of optical fiber cables used under surface, in air and under water. Why is their structure different?  
(5)
5. Can we use same data frame for data transfer and token transfer in FDDI network, If yes explain how and if No then why? Use suitable block diagrams for data frames  
(5)
6. Section and line overhead data bytes in first three columns of each STS-1 frame of SONET are important, what is use of each data frame in data transfer.  
(6)
7. What is Wavelength Division Multiplexing (WDM). How is Wavelength reusability attained in ring topology  
(6)