

Roll No.

Total Pages : 3

Exam Code
6107

8775

BT-7/M-11
BROADBAND COMMUNICATION
 Paper : IT-453

Time : Three Hours] [Maximum Marks : 100]

Note : Attempt five questions in all, selecting at least one question from each unit. All questions carry equal marks.

UNIT-I

1. (a) Compare the step-index and graded-index optical fibers. 6
 (b) Explain the following terms : 9
 - (i) Dispersion shifted fibers.
 - (ii) Leaky Modes.
 - (iii) Mode Coupling Losses.
- (c) A manufacturer wishes to make a silica-core, step-index fiber with $V \approx 75$ and a numerical aperture $NA = 0.30$ to be used at 820 nm. If $n_1 = 1.458$, what should the core size and cladding index be ? 5
2. (a) What are various mechanisms of signal degradation in optical fibers ? Explain the chromatic dispersion in detail. 10
 (b) What is multipath distortion in optical fibers ? How does it affect the Bandwidth Distance Product ? Explain how this figure can be improved. 10

UNIT-II

3. (a) Explain the four basic methods for achieving current amplification in laser diodes by giving suitable diagrams. 10
 (b) Describe the amplification mechanism of Raman amplifier and compare it with EDFA. 10
4. (a) Explain the working of silicon reach-through avalanche photodiode. Compare it with the PIN photodiode on the basis of advantages and disadvantages. 10
 (b) Describe the operational principle of Fiber Bragg grating. How is FBG used for wavelength multiplexing in WDM ? 10

UNIT-III

5. (a) What are the services provided by ISDN ? With the help of a suitable diagram, explain the ISDN architecture. <http://www.kuonline.in> 10
 (b) Explain the algorithm to perform the contention resolution function when multiple subscriber terminal equipments share a single physical line in ISDN. 10
6. (a) Describe the connection-oriented data link control in IEEE802.1Q protocol. 10
 (b) What are two forms of service provided by the LAPD standard to its users ? Explain the structure of the LAPD frame. 10

UNIT-IV

7. (a) Describe the ATM cell format and explain the function of each field in it 10

(b) Explain the operation, administration, and maintenance functions of the SDH-based physical layer in ATM.

10

8. Explain the following :

(i) ATM switching principle.

(ii) ATM adaptation layer type 5. (10+10)

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