

Optical Communication and Networks.

QP Code : 5954

(3 Hours)

[Total Marks : 80

- N.B. : (1) Question No. 1 is compulsory
 (2) Attempt any three questions out of the remaining five questions.
 (3) Figures to the right indicate full marks.

1. (a) Differentiate DWDM, WDM and SONET. 5
 (b) What is optical safety? 5
 (c) Differentiate LED and LASER sources. 5
 (d) Compare different types of splicing techniques. 5
2. (a) Draw the block diagram of optical communication and state its advantages and disadvantages. 10
 (b) Explain different types of fibers with their refractive index profile and mention its dimensions. 5
 (c) A multimode GIF exhibits total pulse broadening of ms over a distance of 15 km. 5
 Estimate (i) The maximum possible Bandwidth on the link assuming no |S|
 (ii) The pulse dispersion per unit length.
 (iii) The Bandwidth length product.
3. (a) What is macrobending loss. Explain with neat diagram. Explain how to minimize microbending losses. 10
 (b) Explain OTDR with neat sketch and mention its advantages and applications. 5
 (c) Derive an Expression for responsivity of PIN photodiode. 5
4. (a) What are optical amplifiers. Explain different types of front end amplifiers. 7
 (b) Explain in detail working principle of RAPD. Why it is called reach through APD. and compare its working with PIN diode. 8
 (c) Explain SONET architecture in detail. 5
5. (a) Explain working principle of isolator with neat sketch. Also compare isolator and circulator. 10
 (b) Write a short note on link power budget. 10
6. (a) Explain OTDM in detail. 10
 (b) Explain optical access networks. 10

Course: B.E. (Sem-VII) (REV -2012) (CBSGS) (E. & T.C. Engg.) (Prog-T3127)

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Correction:

given question in question paper is

Q2 (c) A multimode GIF exhibits total pulse broadening of ms over a distance of 15km.

estimate

- (i) the maximum possible bandwidth on the link assuming no ISI
- (ii) the pulse dispersion per unit length
- (iii) the bandwidth length product.

CORRECT QUESTION IS

Q2(c) A multimode GIF exhibits total pulse broadening of $0.1\mu\text{s}$ over a distance of 15km.

estimate

- (i) the maximum possible bandwidth on the link assuming no **ISI (inter symbol interference)**
 - (ii) the pulse dispersion per unit length
 - (iii) the bandwidth length product **for the fiber.**
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