23-12-23-FN

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 70525

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023

Seventh Semester

Electronics and Communication Engineering

EC 8751 – OPTICAL COMMUNICATION

(Common to : Computer and Communication Engineering)

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State an advantage and a disadvantage of optical communication links.
2. State Snell's law.
3. What is Inter symbol interference?
4. State two characteristics of single mode fibres.
5. What are the sources of noise in optical detectors.
6. What is the frequency separation between adjacent modes of LASER?
7. State the need for preamplifiers in optical receivers.
8. What is meant by quantum limit to detectability?
9. What is DWDM?
10. Define SONET.

PART B — (5 × 13 = 65 marks)

11. (a) Discuss on the wave propagation modes in an ideal step-index fiber.

Or

(b) Explain briefly the fabrication of a fiber with necessary diagrams.

12. (a) Explain the various attenuation mechanisms in an optical fiber.

Or

(b) Write brief notes on

(i) material dispersion. (7)

(ii) polarization mode dispersion. (6)

13. (a) Explain, in detail on LASER, as an optical source.

Or

(b) Explain the working of PIN photo detector and avalanche photo diode.

14. (a) Discuss in detail on optical receiver systems with illustrations.

Or

(b) Explain the operation of LED coupling to single mode fibers.

15. (a) Write notes on

(i) Optical ETHERNET (7)

(ii) SDH (6)

Or

(b) Write notes on

(i) Link power budget (7)

(ii) Rise time budget (6)

PART C — ($1 \times 15 = 15$ marks)

16. (a) (i) Discuss on the quantum limit in the detection of signals in optical receiver. (4)

(ii) Explain the measurement of attenuation and dispersion in optical fibers. (11)

Or

(b) (i) Discuss in detail about OADM Configuration. (10)

(ii) Explain one passive DWDM Component. (5)

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