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Question Paper Code : 21468

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B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Seventh Semester

Electronics and Communication Engineering

EC 2402/EC 72/10144 EC 702 — OPTICAL COMMUNICATION AND NETWORKING

(Regulations 2008/2010)

(Common to PTEC 2402 – Optical Communication and Networking for B.E. (Part-Time) Sixth Semester – Electronics and Communication Engineering – Regulations 2009)

Time : Three hours

Maximum : 100 marks

Missing data may be suitably assumed.

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is total internal reflection in a fiber?
2. Define phase and group velocity.
3. What do you mean by polarization dispersion in a fiber?
4. A fibre has an attenuation of 0.5 dB/Km at 1500 nm. If 0.5mW of optical power is initially launched into the fibre, what is the power level in after 25Km?
5. What is meant by hetero junction structure?
6. Define internal quantum efficiency of LED and Laser.
7. Draw and describe the operation of fiber optic receiver.
8. Mention few fiber diameter measurement techniques.
9. What is optical CDMA?
10. Distinguish SONET and SDH.

PART B — (5 × 16 = 80 marks)

11. (a) (i) With diagram, explain acceptance angle and Numerical Aperture of fibres. (8)

(ii) Classify fibers and explain them. (8)

Or

(b) Describe and derive the modes in planar guide. (16)

12. (a) With necessary diagrams, explain the causes and types of fiber attenuation loss. (16)

Or

(b) (i) With diagram, derive the expression for intra modal dispersion. (10)

(ii) Describe about fiber connectors, splices and couplers. (6)

13. (a) Draw and compare LED and Injection Laser Diode structures. (16)

Or

(b) Discuss about optical detection noise. (16)

14. (a) Derive the probability of error of fiber optic receiver. (16)

Or

(b) Explain how attenuation and dispersion measurements could be done. (16)

15. (a) Explain SONET layers and frame structure with diagram. (16)

Or

(b) Discuss the performance improvement of WDM and EDFA systems. (16)