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Question Paper Code : 81303

M.E. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Second Semester

Computer and Communication

CP 9221/CP 921 — OPTICAL FIBER COMMUNICATION AND NETWORKING

(Regulation 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Describe the Concept of the Quantum Nature of Light.
2. Assume that there is a Glass rod of Refractive Index 1.5, surrounded by Air. Find the Critical Angle.
3. What is the basic Concept of LED System?
4. Compare SLM and STM Operation.
5. How the Multichannel Sequences are used in Light Wave System.
6. Discuss about the BER in Synchronous Sequences.
7. Describe about the Fiber Based Gratings.
8. Discuss about the Fiber Soliton in Dispersion Process.
9. Define MAC Protocols.
10. Give the Features of System Network Evolution.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain in detail about the Mode Theory for Circular Waveguides. (8)
(ii) Describe in detail about the Graded Index Fiber Structure. (8)

Or

- (b) (i) Explain about the various Fiber Materials used and How it is Fabricated. (8)
- (ii) Explain about the Fiber Losses and Explain the Non Linear Optical Effects in detail. (8)
12. (a) Explain the Design Principles of Single-Mode Semiconductor and Transmitters. (16)

Or

- (b) (i) Explain the Concepts and Features of Avalanche Photo Diodes (APD). (6)
- (ii) Describe in detail about the Erbium-Doped Fiber Amplifiers and Amplifier Noise. (10)
13. (a) (i) Contrast with the Concept of Coherent, Homodyne and Heterodyne Formats in detail. (8)
- (ii) Explain the Operation Principles of WDM with Suitable examples. (8)

Or

- (b) Explain in detail :
- (i) TDM Components. (8)
- (ii) Code Division Multiplexing. (8)
14. (a) (i) Explain with a neat sketch with the Dispersion Compensation Fibers. (8)
- (ii) Describe in detail about the Features of Equalizing Filters. (8)

Or

- (b) (i) Explain the Design of the Solitons in Optical Fibers with suitable examples. (8)
- (ii) With a neat sketch, Describe about the High Capacity and WDM Soliton System. (8)
15. (a) With a neat sketch, Explain the Architecture of SONET and Discuss Test Beds on Network Performance. (16)

Or

- (b) Write short notes on :
- (i) Wavelength Routing Networks. (8)
- (ii) Generations of Optical Networks. (8)