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Question Paper Code: 12025

M.E. DEGREE EXAMINATION, DECEMBER 2013.

First Semester

Communication Systems

01PCM104 - OPTICAL NETWORKS

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. What are the reasons for pulse broadening?
2. What is the principle of directional coupler?
3. What are the factors that limit the throughput of broadcast and select network?
4. What is meant by layered architecture?
5. What are the advantages of fixed wavelength routing?
6. What is virtual topology?
7. What are the functions of an optical network management system?
8. Distinguish between line switching and line protection.
9. List a few optical safety arrangements.
10. What is the difference between bit and packet interleaving?

PART - B (5 x 14 = 70 Marks)

11. (a) (i) Describe principles of light propagation in optical fiber. (7)
(ii) Describe the methods of wavelength conversion. (7)

Or

- (b) (i) Draw and explain the construction of an optical isolator. Explain its applications. (7)
- (ii) Describe different types of optical filters. (7)
12. (a) (i) Describe the elements of a SONET infrastructure. (7)
- (ii) Explain the MAC protocol with suitable sketches. (7)

Or

- (b) (i) Describe the topologies for broadcast networks. (7)
- (ii) Explain in detail any two broadcast and select test beds. (7)
13. (a) Describe the various wavelength routing test beds. (14)

Or

- (b) Describe the major issues in wavelength routed networks. (14)
14. (a) (i) Define Synchronization. Explain the methods of synchronization in photonic packet switching networks. (7)
- (ii) Write notes on Switch based networks. (7)

Or

- (b) Explain in details the future optical access network and OTDM network. (14)
15. (a) (i) Explain the different configurations of optical amplifiers. (4)
- (ii) Explain the factors to be considered in designing an optical amplifier. (4)
- (iii) What is the need for wavelength stabilization in an optical system? Explain the wavelength stabilization technique. (6)

Or

- (b) (i) Describe the functions of configuration management system. (8)
- (ii) Write notes on Service Interface. (6)

PART - C (1 x 10 = 10 Marks)

16. (a) Write notes on SOA and Raman amplifier. (10)

Or

- (b) Describe the dispersion compensation techniques and their applications in network design. (10)