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Question Paper Code : 71216

M.E./M.Tech. DEGREE EXAMINATION, JUNE/JULY 2013.

First Semester

Communication Systems

CU 9213/CU 913 – OPTICAL COMMUNICATION NETWORKS

(Common to M.E. Digital Electronics and Communication Engineering and M.Tech. Information and Communication Technology)

(Regulation 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the different loss components in optical fibers?
2. Enumerate the features and applications of Solitons.
3. What is the difference between LAN and WAN?
4. What are the types of WDM? Mention their advantages.
5. Why is minimization of routing updates required in networking?
6. What is the principle of client layers of the optical layer?
7. What are the merits of photonic switching over electronic switching?
8. What is the need for synchronization?
9. What is the concept of Optical Cross connects?
10. What are the basic functions of Link Management Protocol?

PART B — (5 × 16 = 80 marks)

11. (a) (i) State and explain Snell's law and its application in optical fibers. (8)
(ii) Explain the characteristics of Solitons in detail. (8)

Or

- (b) (i) Explain the fabrication of a simple 2×2 fiber optic coupler with a neat diagram. Derive its coupling length. (8)
(ii) Explain the features and applications of optical amplifiers and optical switches. (8)

12. (a) (i) Explain the SONET/SDH frame structure with a neat diagram. (8)
(ii) Distinguish (8)
(1) MAN from WAN
(2) MAN from LAN.

Or

- (b) (i) Explain the optical network layered architecture with a diagram. (6)
(ii) Explain the wavelength routing architecture in detail. (10)
13. (a) (i) Explain the principle of WRN. Mention its potential applications. (8)
(ii) Explain the significance of wavelength assignment in detail. (8)

Or

- (b) (i) Explain how node designs are carried out in WRN with an example. (8)
(ii) Give an account on 'Wavelength routing test beds'. (8)
14. (a) (i) Explain the principle of OTDM in detail. (8)
(ii) Explain the components and parameters of WDM in detail. (8)

Or

- (b) (i) Explain the unique features of broad cast OTDM networks. (9)
(ii) Explain the optical access network architecture. (7)
15. (a) (i) Explain the need for optical amplifiers in optical network design. (8)
(ii) What is wavelength stabilization? Explain in detail. (8)

Or

- (b) Write technical notes on :
(i) Control channel management (5)
(ii) Trace monitoring (5)
(iii) Optical safety (6)