Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 51221

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Seventh Semester

Electronics and Communication Engineering

EC 1401 – OPTICAL COMMUNICATION AND NETWORKS

(Regulation 2008)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Identify the functions of add drop multiplexer.

2. Draw the structure of circulator.

3. List out the benefits of SONET over PDH networks.

4. Identify the uses of protection architecture.

5. What are the topologies available in Broadcast and Select networks?

6. Identify the advantages of broadcast and select networks.

7. Find the required number of router ports at each node of a 3-node network, interconnected by WDM link when there is no optical add-drop multiplexer.

8. Classify the types of MAC protocols in broadcast and select networks.

9. Describe about optical TDM networks.

10. Distinguish STM and WDM.

PART B — (5 × 16 = 80 marks)

11. (a) (i) With diagram, explain the principle of operation of transmission Optical amplifier. (10)

    (ii) Identify the key characteristics of Optical filtering techniques. (6)

    Or

    (b) With diagram, explain Fabry Perot filter and Mach Zehnder Interferometer. (16)

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

    Or

    (b) Explain the multiplexing scheme followed by the synchronous optical network and draw the mapping of lower speed asynchronous stream into virtual tributaries in SONET. (16)

13. (a) With diagram, explain the media access control protocols in broadcast and select networks. (16)

    Or

    (b) With diagram, explain the single hop and multihop broadcast and select networks. (16)

14. (a) With necessary diagram, explain the cost tradeoffs in designing different networks to meet the same traffic demand, by varying the light path topology. (16)

    Or

    (b) With suitable example, explain the conditions and constraints in the formulation and solution of routing and wavelength assignment problem in an optimal way. (16)

15. (a) Explain the processes of bit and byte interleaving in optical TDM network, with neat sketch. (16)

    Or

    (b) In a high capacity network, explain how synchronization is achieved. (16)

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