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Question Paper Code : 86583

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Seventh Semester

Electronics and Communication Engineering

EC 1401 – OPTICAL COMMUNICATION AND NETWORKS

(Regulations 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the principle of Fabry Perot filter.
2. What is AWG?
3. Mention the important features of SONET.
4. Draw the layered architecture of SONET.
5. State the key difference between single-hop and multi-hop networks.
6. What is the mean hop distance for a shufflenet of size (p,k)?
7. Write the functions of WXC.
8. Define Circuit switching.
9. List the technical challenges in the implementation of OTDM.
10. Distinguish bit and packet interleaving.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the principle of operation of Fabry-perot filter. Describe its tunability. (8)
- (ii) Draw the diagram and explain the principle of operation of Mach-Zehnder interferometer. Describe its transfer function. (8)

Or

- (b) (i) With the help of energy band structures, explain the principle of operation of SOA. Explain crosstalk in it. (8)
- (ii) Explain Mechanical, Electro-optic and thermo-optic switches with their performance comparison. (8)
- 12. (a) (i) Draw and explain the SONET network elements and topologies. (10)
- (ii) Explain the hierarchical multiplexing structure used in SONET. (6)

Or

- (b) (i) Describe the different SONET rings with neat diagrams. (10)
- (ii) Discuss the importance of network management. (6)
- 13. (a) (i) Describe various media access control protocols for Broadcast optical network. (8)
- (ii) Explain the procedures used for characterising the multihop network. (8)

Or

- (b) Write short notes on various test beds: (8 + 8)
 - (i) AON
 - (ii) NTT
- 14. (a) (i) What are the various types of wavelength conversions involved in wavelength routing networks? Explain. (8)
- (ii) Show how WXC nodes can be realized in different methods and explain them. (8)

Or

- (b) Explain in detail the Routing and wavelength assignment algorithms. (16)
- 15. (a) Explain how synchronization is achieved in OTDM networks. Also state its significance.

Or

- (b) Discuss in detail about OTDM testbeds
