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Second Semester M.Tech. Degree Examination, June/July 2011
Optical Networks

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions

- 1 a. Describe the main characteristics of the three generations of digital transport networks. (06 Marks)
b. Explain how optical systems have evolved over time till the present. (04 Marks)
c. What are the various digital multiplexing technologies available? Explain along with the signaling hierarchies under different standards. (10 Marks)
- 2 a. Describe the key performance properties of optical fibers. (10 Marks)
b. Explain with block diagrams, the five methods of clock exchange employed in a network. (10 Marks)
- 3 a. What is the basic unit of transmission in SONET? Explain its structure and workout the rationale behind using the specified rate of transmission. (10 Marks)
b. Describe the OTN layered architecture in detail bringing out the functions of each layer. (10 Marks)
- 4 a. What is WDM? Explain WDM links and show how WDM topologies are used in optical systems. (10 Marks)
b. What are the different types of topologies used in optical networks? Explain the working of the point-to-point topology and its reliability. (10 Marks)
- 5 a. Explain the following:
i) Label switching.
ii) FEC.
iii) Types of MPLS nodes. (10 Marks)
b. Explain the two general models adopted as a framework for 1P over optical networks. (06 Marks)
c. Explain the three interconnections used for 1P diagrams in optical networks. (04 Marks)
- 6 a. What are the basic functions of LMP? Explain how control channel is managed in detail. (10 Marks)
b. Explain the link connectivity verification phase of LMP with illustrative example. (10 Marks)
- 7 a. With the help of a block diagram, explain the working of an optical router, highlighting the various operation in detail. (10 Marks)
b. Explain the NNI model with emphasis as their entities, signaling requirements and neighbour discovery, topology. (10 Marks)
- 8 a. Explain the encapsulation methods adopted for running 1P over ATM. (10 Marks)
b. Explain the protocol stack for a 1P-based transport network. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.