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10SCS24

Second Semester M.Tech. Degree Examination, June 2012
Optical Networks

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. Compare the three generations of digital transport networks by their main characteristics. (06 Marks)
b. Explain with the help of a block diagram, the components of an optical node. (08 Marks)
c. What are the available digital multiplexing hierarchies? Explain the different schemes in detail. (06 Marks)
- 2 a. Describe with neat block diagrams, the basic structure of fiber optic media giving their working principle and types of fibers. (10 Marks)
b. Explain the clocking mechanism adopted in optical networks and the types of timing in such networks. (10 Marks)
- 3 a. What are virtual tributaries? Explain how payloads are managed with VT's. (10 Marks)
b. Write explanatory notes on the following:
i) Digital wrapper
ii) Control plane
iii) In-band and out-of-band control signaling. (10 Marks)
- 4 a. What are WADM's? Explain how connections are managed using WADM channels. (08 Marks)
b. Mention the types of topologies used in optical networks along with their attributes. (06 Marks)
c. Explain the working of protection switching on the 4F-BLSR for link and node failures. (06 Marks)
- 5 a. What are the main reasons for label switching to become popular in optical networks? Explain. (06 Marks)
b. Explain the working of MPLS in detail. (08 Marks)
c. Describe the use of generalized MPLS in optical networks. (06 Marks)
- 6 a. Explain the basic functions of LMP and show how the control channel is managed. (10 Marks)
b. Explain in detail the link connectivity phase of LMP. (10 Marks)
- 7 a. With the help of a functional diagram, define the major functions of an optical router. Explain in detail how the control element of such a router is implemented. (10 Marks)
b. Enumerate the main objectives for a ASON as defined by IETF. (04 Marks)
c. Briefly explain the entities of the NNI model. (06 Marks)
- 8 a. Explain the encapsulation of IP and PPP into an ATM cell. What are the main overheads of IP and ATM? (10 Marks)
b. Explain the data plane tables for switching an IP datagram from an ingress node to a transit node in the path. List the services performed by each table. (10 Marks)

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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.