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Second Semester M.Tech. Degree Examination, June/July 2013
Optical Networks

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

1.
 - a. Write the table that depicts the characteristics of 3 generation of digital transport (carrier) networks. (05 Marks)
 - b. Differentiate between TDM and WDM. (04 Marks)
 - c. Explain with diagram, the digital multiplexing and digital signaling hierarchy. (06 Marks)
 - d. Explain the components of the optical network node. (05 Marks)
2.
 - a. Explain in brief, the key performance properties of fiber. (08 Marks)
 - b. What is BITS? Explain the inphase and out of phase condition of BITS. (04 Marks)
 - c. Why timing and synchronization essential in digital network? What methods are followed for clock exchange? Explain with diagrams. (08 Marks)
3.
 - a. With the help of diagram, explain SONET/SDH frame structure and functional components. (08 Marks)
 - b. Write a note on In band and out – of – band control signaling of 3 G networks. (04 Marks)
 - c. Briefly explain with a neat diagram of optical transport network layered model. (08 Marks)
4.
 - a. With respect to the WDM link, explain the WDM operation. (04 Marks)
 - b. What are WADM input and output ports. (04 Marks)
 - c. What are the different types of topologies found in optical network? Explain bidirectional link switching ring topology. (08 Marks)
 - d. Define : i) Line and path protection switching ii) Working and protection fiber. (04 Marks)
5.
 - a. What is label distribution and binding what are the methods for label distribution. (05 Marks)
 - b. With help of neat diagram, explain how MPLS support VPN(VPNS). (05 Marks)
 - c. With the help of neat block diagram, explain the three control plane of 3 G transport networks. How do they inter work? (10 Marks)
6.
 - a. How is GMPLS used in optical networks? What are all the applications supported by G.709. (08 Marks)
 - b. Explain how control channel management is used to establish and maintain link connectivity between two adjacent nodes in LMP. (08 Marks)
 - c. How are LMP operations extended for optical link systems (OLSS). (04 Marks)
7.
 - a. Explain briefly the major function of an optical router with the help of its functional view. (08 Marks)
 - b. How wavelength OSP and MPLS LSP is correlated? Explain with diagram the various steps required. (08 Marks)
 - c. Write short notes on micro electromechanical systems. (04 Marks)
8.
 - a. What are the objectives for an ASON as defined by IETF? (04 Marks)
 - b. Write short notes on PPP and L2TP (04 Marks)
 - c. Draw a neat diagram of the internet transport protocol stack. (04 Marks)
 - d. Briefly explain the three different categories of attributes that are negotiated between the user and network before connection establishment. (08 Marks)