First Semester M.Tech. Degree Examination, February 2013
Optical Networks

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions.*

1   a.   Explain the benefits of SONET/SDH compared to PDH.   **(10 Marks)**

      b.   With a neat sketch, explain the mapping of lower speed asynchronous strains in to virtual tributaries in SONET.   **(10 Marks)**

2   a.   Explain the structure of STS-1 frame and STS-N-frame.   **(08 Marks)**

      b.   Explain the following with respect to the following:
          i)   Section overhead
          ii)   Line overhead
          iii)   Path overhead.   **(12 Marks)**

3   a.   Explain the noteworthy features of WDM network.   **(10 Marks)**

      b.   What is optical cross connect (OXC)? What are the key functions that an optical cross connect (OXC) provides in a large network.   **(10 Marks)**

4   a.   Explain several functions of network management.   **(10 Marks)**

      b.   With a neat sketch, explain how the management functions are implemented in a typical network.   **(10 Marks)**

5   a.   Discuss optical safety in class I, class III a and class III b systems.   **(10 Marks)**

      b.   With a neat block diagram, explain the working of a system with two nodes A and B using the open fiber control (OFC) protocol.   **(10 Marks)**

6   a.   Explain the protection techniques for SONET/SDH point to point links.   **(10 Marks)**

      b.   Explain different types of ring architectures in SONET/SDH. Why they are called self healing rings.   **(10 Marks)**

7   a.   Compare different types of self healing rings.   **(08 Marks)**

      b.   Explain how BLSR takes care of   i) Node failure;   ii) Link failure.   **(12 Marks)**

8   a.   Explain the service classes based on protection provided by the optical layer.   **(10 Marks)**

      b.   Explain three different light path topologies that can be deployed over a fiber ring topology.   **(10 Marks)**

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