

(Following Paper ID and Roll No. to be filled in your Answer Books)

PAPER ID : ME10

Roll No.

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**M. TECH. (Sem.II)**

**THEORY EXAMINATION 2015-16**

**OPTICAL NETWORK**

Time: 3 Hours

Total Marks: 100

**Note :** Attempt any five questions. All the questions carry equal marks.  
Assume suitable data if any missing.

- 1.(a) Give an example of a star network without wavelength conversion where  $\frac{3}{2}L$  wave-length are necessary to perform the wavelength.
- (b) Consider a ring network with a lightpath request set of one lightpath between each source-destination pair. Compute the number of wavelengths sufficient to support this set with full wavelength conversion and without wavelength conversion. What do you conclude from this?
- 2.(a) Which sublayer within the optical layer would be responsible for handling the following functions?
  - (i) Setting up and taking down light paths in the network.
  - (ii) Monitoring and changing the digital wrapper overhead in a lightpath.

- (b) Detecting a fiber cable cut in a WDM line system.
  - (c) Detecting failure of an individual lightpath.
- 3.(a) Explain the advantages of SONET and SDH standard used in optical networks.
- (b) Explain SONET format with neat diagram.
- 4.(a) Explain the optical network layered architecture with a diagram.
- (b) Explain Network management and Protection architectures of SDH.
- 5.(a) Explain wavelength routing architecture with a diagram.
- (b) Explain the function of client layer in optical layer.
- 6.(a) Explain the functions of Media access control protocols.
- (b) Discuss the mapping of lower-speed asynchronous streams into virtual tributaries in SONET.
- 7.(a) Discuss the header structure of ATM cells across :
- (i) UNI
  - (ii) NNI
- (b) Discuss Multiprotocol Label Switching.
- 8.(a) Draw the architecture of storage area network and discuss it.
- (b) Which sublayer within the SONET or optical layer would be responsible for handling the following functions?

- (i) A SONET path fails and the traffic must be switched over to another path.
- (ii) Many SONET streams are to be multiplexed onto a higher speed stream and transmitted over a SONET link.

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