Total No. of Questions :8] *[Total No. of Printed Pages :2*

Roll No .....

MEDC-204

M.E./M.Tech., II Semester

Examination, December 2016

Optical Network

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) Draw and explain layered hierarchy of a network showing the layers at each network element.

   b) Enlist the key network elements that enables optical networking and explain them in detail.

2. a) Distinguish between transparent and non transparent network.

   b) Explain optical filtering technologies and enlist their key characteristics for use in systems.

3. a) Derive the power transfer function of the fabry-perot filter.

   b) Show that the FWHM bandwidth of the acousto-optic filter is $\approx 0.8\lambda_0^2 / L\Delta n$.

4. a) Explain elements of a SONET infrastructure with different SONET configuration.

   b) Explain Routing and forwarding in an IP network.

5. Consider an ESCON link operating at a data rate of 17 M Bytes/s. The sender transmits a block of data and waits for an acknowledgment before sending the next blocks of data. Compute the throughput on the link for the following sets of parameters :

   a) Block size of 1 k Byte, link length of 1km

   b) Block size of 1 k Byte, link length of 10km

   c) Block size of 4 k Byte, link length of 10km

   d) Block size of 4 k Byte, link length of 100km

   Assume speed of light in fiber as 2×10^5km/s.

6. a) Draw and explain the lightpaths and their wavelength assignment for an all optical four-node network configuration.

   b) Enlist and explain in detail the noteworthy features of wavelength routing network.

7. a) In an infinite slotted ALOHA system, the mean number of slots a station wait between collision and its retransmission is 4. Plot delay versus throughput curve for this system.

   b) Discuss topologies for broadcast networks.

8. Write short notes on (any two) :

   a) Photonic packet switching

   b) Deflection Routing

   c) OTDM

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