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Paper Id: | **131832** | **Roll No:** | | | | | | | | | |

B TECH
(SEM VIII) THEORY EXAMINATION 2017-18
OPTICAL NETWORK

Time: 3 Hours   *Total Marks: 100*

Note: 1.   Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1.   Attempt *all* questions in brief.   2 x10 = 20

   a. Draw SDH frame structure.
   b. Write down two advantages of PNphotodiode.
   c. Give the important features of time-slotted optical TDM network
   d. What is OLT?
   e. What are the three topologies used for fiber optical network?
   f. What is total number of switches in CLOS Architecture?
   g. Write down differences between isolators and circulators.
   h. What is HDLC?
   i. What is meant by cross- phase modulation (XPM)?
   j. Why SONET/SDH protection has been so successful?

SECTION B

2.   Attempt any *three* of the following: 10 x 3 = 30

   a.   Explain briefly main categories of Nonlinear effects in Optical communication system.
   b.   What are large optical switches? Give an account of various architecture used for building optical switches.
   c.   Explains OADM and its architecture.
   d.   Write a short note on network survivability with protection of client layer. Discuss the operation of interworking between layers.
   e.   What is photonic packet switched network? Discuss its salient features.

SECTION C

3.   Attempt any *one* part of the following: 10 x 1 = 10

   (a)   Explain Layered hierarchy of optical layer.
   (b)   Discuss optical packet switching and optical fiber communication over other communication

4.   Attempt any *one* part of the following: 10 x 1 = 10

   (a)   With relevant figure discuss the working and principle of operation of Isolator. How directional couplers are realized using optical fiber. Calculate its coupling coefficient.

   (b)   Explain principle operation and working of Fiber Bragg Grating. Explain with Diagram. Mention application, advantages and disadvantages of fiber Bragg grating.

5. **Attempt any *one* part of the following:**   **10 x 1 = 10**

  (a)   What is multiplexing in reference to SONET/SDH? Give a brief account of SONET/SDH layers with diagram

  (b)   What is Framing techniques? Discuss IP routing and forwarding and QOS.

6. **Attempt any *one* part of the following:**   **10 x 1 = 10**

  (a)   Identify different possible strategies for implementation of an access network and outline the functional blocks for an optical fiber access network to provide FTTC and FTTH.

  (b)   Write a short note on cast trade off in WDM network. Give an account of routing and wavelength assignment problem in optical networks.

7. **Attempt any *one* part of the following:**   **10 x 1 = 10**

  (a)   Write notes on:
         (i) OTDM
         (ii) Burst switching.

  (b)   Discuss in detail, the deployment considerations for SONET/SDH core network.