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Printed Pages—3 **EEC031**

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

PAPER ID : 2886 **Roll No.** | | | | | | | | | | |

B.Tech.

(SEM. VIII) THEORY EXAMINATION 2011-12

OPTICAL NETWORKS

Time : 3 Hours *Total Marks : 100*

Note :—Attempt **all** questions. All questions carry equal marks.

1. Attempt any **four** parts of the following :— **(5×4=20)**

   (a) Derive the expression for the finesse of the Fabry-Perot filter. Assume that the minor reflectivity is close to unity.

   (b) Derive the power transfer function of the MZI, assuming only one of its two inputs is active.

   (c) Derive the expression for Effective transmission length.

   (d) What do you mean by Bragg Gratings and Fiber Gratings ?

   (e) Compare CPM & SPM.

   (f) What is key-drivers for second-generation optical network and explain optical networks with diagram.

2. Attempt any **four** of the following :— **(5×4=20)**

   (a) Explain the principle of operation of EDFA and explain its working with suitable diagram.

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(b) Explain liquid crystal and electro-optic switches. Write down its two applications.

(c) What are the main considerations in building large switches ? Explain it with relevant figures.

(d) What do you mean by Wavelength converters and explain one of its ways for achieving wavelength conversion.

(e) What is SOLITONS ? Write down its Basic principle of operation. Explain dispersion managed Solitons.

(f) How many methods are there for introducing cross talks and how it can be reduced ?

3. Attempt any **two** of the following :— **(10×2=20)**

(a) What do you mean by reconfigurability ? How many different types of reconfigurable OADM architectures are there ? Explain.

(b) What are the advantages of SONET/SDH ? Explain SONET/SDH layers.

(c) Explain IP routing and forwarding and QOS.

4. Attempt any **two** of the following :— **(10×2=20)**

(a) Explain Architecture of an Access Network. Classify different types of Access networks. Give two suitable examples.

(b) Compare the performance of UPSRs and BLSR/2s in cases where all traffic is between a hub node and the other nodes. Assume the same Ring speed in both cases.

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(c) Enumerate different types of protection techniques for point-to-point links and also define Ring interconnection and Dual homing.

5. Attempt any **two** of the following :— **(10×2=20)**

(a) What do you mean by OTDM ? Explain it along with Bit interleaving and Packet interleaving.

(b) Write short notes on the following :

(i) Input and output buffering

(ii) Long Haul and Metro Networks.

(c) Burst switching is essentially a variation of PPS. Comment.