

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

PAPER ID : 2886 Roll No.

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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.

- (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.

(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.