



PAPER ID-310757

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Subject Code: KEC073

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BTECH
(SEM VII) THEORY EXAMINATION 2023-24
OPTICAL NETWORK

TIME: 3 HRS**M.MARKS: 100****Note:** 1. Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt all questions in brief.**

Qno.	Question	Marks	CO
a.	Explain four waves mixing in brief.	2	1
b.	Name the two examples of first-generation optical networks	2	1
c.	What is coupler used for?	2	2
d.	What is crosstalk in optical networks?	2	2
e.	What is an optical add/drop multiplexer?	2	3
f.	Why SONET/SDH protection has been so successful?	2	3
g.	Give an example of a network access.	2	4
h.	What are the advantages of WDM?	2	4
i.	What is the difference between optical packet switching and optical burst switching?	2	5
j.	What is the application of optical time division multiplexing?	2	5

SECTION B**2. Attempt any three of the following:**

a.	Explain optical packet switching in detail and also discuss its limitations	10	1
b.	Illustrate the difference between inter-channel and intra-channel crosstalk.	10	2
c.	With a neat diagram, explain the OTN frame structure. Also explain OTN hierarchy in detail. Why is this hierarchy more elaborate than SONET/SDH?	10	3
d.	Write a short note on network survivability with protection of client layer. Discuss the operation of interworking between layers.	10	4
e.	Explain optical time division multiplexing (OTDM) in detail	10	5

SECTION C**3. Attempt any one part of the following:**

a.	Explain various non-linear effects in optical fiber. How is Multiplexing done in optical networks?	10	1
b.	Discuss stimulated brillouin scattering and stimulated raman scattering.	10	1

4. Attempt any one part of the following:

a.	What are Bragg Gratings? Explain with Diagram.	10	2
b.	Explain the principle of operation of Fabry Perot (FP) filter and Mach Zehnder Interferometer (MZI)?	10	2

5. Attempt any one part of the following:

a.	Give a brief account of SONET /SDH layers with diagram.	10	3
b.	Why SONET/SDH are called self-healing. Explain the protection technique implemented in SONET/SDH rings?	10	3

6. Attempt any one part of the following:

a.	What are Design Parameters for light Path Topologies in WDM Networks? Calculate design parameter required in determining and minimizing network cost in PWDM network.	10	4
b.	Explain the types of WDM in detail.	10	4

7. Attempt any one part of the following:

a.	Write a short note on- (i) Buffering (ii) Burst Switching	10	5
b.	Discuss in detail, the deployment considerations for SONET/SDH core network	10	5