UNIT V OPTICAL NETWORKS AND SYSTEM TRANSMISSION

Basic Networks – SONET / SDH – Broadcast – and –select WDM Networks –Wavelength Routed Networks – Non linear effects on Network performance –Link Power budget -Rise time budget- Noise Effects on System Performance-Operational Principles of WDM Performance of WDM + EDFA system – Solitons – Optical CDMA – Ultra High Capacity Networks**.**

PART A

1. State the concept of WDM

2. Define soliton

3. What is SONET

4. Summarize the transmission bit rate of the basic SONET frame in Mbps

5. Outline interchannel cross talk that occurs in a WDM system

6. Write about broadcast and select network?

7. List the benefits of SONET over PDH networks.

8. Give the significance of solitons.

9. Illustrate the problems associated with PDH networks?

10. Express the various SONET/SDH layers.

11. Demonstrate a model of EDFA

12. Report about Chirping

13. Demonstrate the difference between fundamental and higher order soliton.

14. Analyze the cross-phase modulation

15. Analyze how the speckle pattern can form.

16. Classify the important features of time-slotted optical TDM network.

17. Justify the features in DWDM

18. Conclude the advantages of using soliton signals through fiber.

19. Develop the basic performance of the WDM

20. Propose the three topologies used for fiber optic network

PART – B

1. Draw the block diagram of OTDR. Cite about the measurement of any two fiber optic measurement with this. (16)

2. Describe the following:

(i)WDM networks (8)

(ii)Ultra high capacity networks (8)

3. (i)Define and explain the principle of WDM networks (8)

(ii)State the nonlinear effects on optical network performance.(8)

4. (i)Outline the features of ultra high capacity networks (8)

(ii)Identify the OTDR and its applications (8)

5. (i)Generalize four-fiber BLSR ring in a SONET. Explain the reconfiguration of the same during node or fiber failure. (8)

 (ii)Restate 'broadcast- and –select multihop network'. Explain. (8)

6. (i)Explain the following requirements for the design of an optically amplified WDM link:

(1)Link Bandwidth

(2)Optical power requirements for a specific BER.

(ii)Paraphrase notes on solitons. (8)

7. (i)Give main idea about SA/SA protocol and modified SA/SA protocol of broadcast and select networks. (8)

(ii)Express the non-linear effects on network performance (8)

8. (i)Model the Layered architecture of SONET/SDH with neat diagram. (8)

(ii)Illustrate the detailed notes on optical CDMA and its applications. (8)

9. Demonstrate SONET layers and frame structure with diagram.(16)

10 With suitable example, analyze the conditions and constraints in the formulation and solution of routing and wavelength assignment problem in an optimal way. (8)

Analyze the features of Solitons (8)

11 Find out the concepts of media access control protocols in broadcast and select networks. Explain(16)

12 (i)Group the non-linear effects on network performance in detail. (8)

(ii)Inspect the basics of optical CDMA systems. (8)

13 Deduce the basic frame structure and network architecture of SONET. (16)

14 Propose the salient feature of solitons using relevant expressions and diagrams (8)

Develop a theory on the noise Effects on System Performance (8)