EC1401-OPTICAL COMMUNICATION NETWORKS

PART-A

UNIT-I OPTICAL NETWORKING COMPONENTS

1. What is the important role of optical fiber communication networks?
2. Write the examples of first generation optical networks.
3. What are the major advantages of point to point communication in optical network?
4. What are the three types of services in second generation optical communication?
5. What is 3R?
6. What is 2R?
7. What is 1R?
8. What is mean by directional coupler?
9. What is mean by isolator?
10. What is mean by insertion loss?
11. What is mean by isolation?
12. What is mean by circulator?
13. What are the least two applications of optical filters?
14. Define diffraction.
15. Write the applications of fiber gratings.
16. What are the main advantages of fiber Gratings?
17. What is mean by Fiber Bragg Gratings?
18. What is mean by MZI?
19. Write the different type of optical amplifiers.
20. Compare Optical amplifiers and Regenerators.
21. Write short notes on Optical Switches.
22. What are the key parameters to characterize the suitability of switches in optical networking applications?
23. Write the features of mechanical switches.
24. What are main considerations while building the large swiches?
25. Define wavelength converters.

PART-B

1. Explain in detail the generation of optical networks
2. Explain the operating principle of Couplers
3. Describe in detail the working principle of isolators and circulators
4. Explain the various grating techniques involved in optical networks

5. Explain the operation of Fabry-perot filters
6. Explain the operation of Mach-zehnder interferometer
7. Explain Acousto-optic tunable filter
8. Explain the operation of Erbium -Doped fiber Amplifier
9. Explain the importance of optical switches in networks
10. Write the necessity of wavelength converters in optical networks?

UNIT –II SONET AND SDH NETWORKS

PART-A

1. What is mean by PRS?
2. How do you obtain the synchronous timing in a SONET network?
3. How to solve the signal conversion problem?
4. What is mean PDH?
5. Define Jitter.
6. What is mean by wander?
7. Write the types of SONET layers.
8. Define section layer.
9. What is mean by STE?
10. How can you compute the actual line rate of SONET STS – 1 frame?
11. What is mean by SONET alarm?
12. Define anomaly.
13. What is mean by defect?
14. Define failure.
15. What is mean by remote failure indication?
16. What is mean by PRS?
17. Write the optical interface layers.
18. What is mean by photonic layer?
19. Define stuffing.
20. What is mean by B3 Error?

PART-B

1. Discuss in detail about the problems suffered by Plesiochronous digital hierarchy?
2. Explain the Multiplexing structure employed in SONET/SDH network?
3. Explain the elements of SONET/SDH infrastructure?
4. Write short notes on SONET/SDH layers.
5. Write short notes on SONET/SDH Frame

6. Describe in detail about SONET/SDH Ring Architecture?

7. Discuss in detail the Network management systems

8. Illustrate in detail about protection mechanism

UNIT – III BROADCAST AND SELECT NETWORK

PART-A

1. How the LAN categorized?
2. What are the popular topologies?
3. What is mean by MAC protocol?
4. Define STARNET.
5. Define splitting loss ratio.
6. What is mean by packet-switching protocols?
7. Define Slotted Aloha/slotted aloha.
8. What is mean by Throughput Analysis
9. What is DT-WDMA
10. Define Testbeds
11. Define Lambdanet
12. What is NTT's Testbed
13. Define Rainbow
14. Define BBC Television studio testbed.
15. What is lighting?
16. What is wavelength Partitioners?

PART-B

1. Explain the various topologies for broadcast networks.

2. Explain in detail About the MDEIA ACCESS PROTOCOL.

3. Explain the various kinds of broadcast and select test beds

4. Write short notes on Traffic classes.

UNIT – IV WAVELENGTH ROUTING NETWORKS

PART-A

1. What is optical layer?
2. Define Transparency?
3. Define wavelength reuse?
4. What is reliability?
5. Define virtual Topology.
6. What is Circuit switching?

7. What is a key element of nodes?
8. What is Degree of wavelength conversion?
9. Define multiple Fiber networks?
10. What is degree of transparency?
11. Define the category of light paths request?
12. Define RWA.
13. Define different types of light paths and network edges.
14. Advantages of shuffle nets.

PART-B

1. Describe in detail about node design for wavelength routing networks
2. Explain the various traffic models of wavelength routing networks
3. Discuss about the static network of wavelength routing networks
4. Explain the various routing and wavelength assignment methods
5. Explain the various wavelengths routing test beds

UNIT - V HIGH CAPACITY NETWORK

PART-A

1. How you increasing the transmission capacity?
2. What is SDM approach?
3. What is TDM approach?
4. What is WDM Approach?
5. Define: Synchronization
6. Define: Switch Based networks
7. What is small buffer?
8. Define live lock.
9. What is ATMOS?
10. Define Synchrolan.

PART-B

1. Explain space division multiplexing approach, time division multiplexing approach, and wave length division multiplexing approach
2. Explain the various application areas of optical networks
3. Write short notes on OTDM
4. Explain the synchronization techniques involved in broadcast optical network
5. Explain in detail about Switch based networks.

6. Discuss in detail the various OTDM test beds

7. Explain about Multiplexing & Demultiplexing of OTDM