

SCAD ENGINEERING COLLEGE

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ACADEMIC YEAR 2015- 2016 / ODD SEMESTER

SUB.NAME : EC2402 - OPTICAL COMMUNICATION AND NETWORKING
BRANCH : ECE YEAR/SEM : IV / VII

UNIT I

OPTICAL NETWORKING COMPONENTS

PART-A

1. List out the advantages of optical networks.
2. List out the services offered by II generation optical.
3. List out the key characteristics of optical filter.
4. What is Bragg phase matching condition?
5. Define Free spectral range.
6. Define population inversion.
7. What is Stark splitting?
8. Define Extinction ratio?
9. What is the application of optical switches?
10. Why wavelength converters are useful components in WDM networks?

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 are all the problems suffered by Plesiochronous digital hierarchy?
2. Define virtual tributary in SONET
3. List out the four sizes of virtual tributary.
4. What are the two types of Ring architecture?
5. What is the use of Digital cross connect?
6. What is grooming?
7. What are the classifications of physical layer interfaces for SONET in terms of Loss?
8. Define Ultra long reach systems
9. List the three important blocks of optical layer.
10. What is optical channel?

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. What are the functions of MAC protocol?
2. When a protocol is named as slotted Aloha/slotted Aloha protocol?
3. List the three different types of traffic classes.

4. What is Class1 traffic?
5. What is Class2 traffic?
6. What is datagram traffic?
7. List the various kinds of broadcast and select test beds.
8. What is the structure of lightning test bed?
9. What is the application of super net test bed?

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. When a node is called as add/drop multiplexer node?
2. List the various conversions involved in wavelength add/drop multiplexer.
3. Define online and off line light path.
4. How do you calculate the traffic load in wavelength routing networks?
5. Listout the constraints followed by the wavelength assignment network.
6. What is Africa ONE?
7. What are the two mechanisms implemented in NTT ring test bed?

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 NETWORKS

PART-A

1. What is the drawback of SDM approach?
2. What is the application area incorporated with High capacity optical network?
3. Differentiate Broadcast OTDM networks with Switch-based OTDM networks
4. What are the components present in nonlinear optical loop mirror?
5. What is terahertz optical asymmetric de-mux?
6. List the various OTDM test beds.

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