JAYA ENGINEERING COLLEGE– THIRUNINRAVUR.

8TH SEMESTER – B.E

(REGULATION 2008)

Branch: **ECE**

EC2044 TELECOMMUNICATION SWITCHING AND NETWORKS
UNIT I
MULTIPLEXING
PART – B

1. Explain the concept of FDM multiplexing and modulation.
2. Describe the ds3 payload,Virtual tributaries,e4 payload mapping.
3. Explain the following terms.
4. (i)TDM loops and rings. (ii)Binary N-zero substitution with example.
5. Explain the functions of SONET multiplexing and networks.
6. Give a brief note on operation, administrative and maintenance features of SONET.
7. Give a brief note on OAM features of SONET.
8. Explain the functions of SONET multiplexing and networks.
9. Write about SONET frame format.
10. Explain the concept SONET rings.
11. Discuss about the concept of digital transmission and multiplexing.
12. Draw and explain time division multiplex loops and rings.
13. Explain the payload framing and frequency justification operations in SONET.
14. Draw and briefly dicuss the different types of SONET rings.
15. Draw and explain the operation of unidirectional patch switched and bidirectional line switched SONET rings.
16. Describe the multiplexing standards used for the transmission of digital data.
    - (i) Causes and minimization of intersymbol interference
    - (ii) Techniques of introducing signal transitions in the transmitted waveform to ensure timing recovery.
    - (iii) Method of framing in TDM systems.

17. Illustrate the frequency division multiplexing operation with neat black diagram.
18. Explain the following with respect to digital transmission systems.

UNIT II
DIGITAL SWITCHING
PART – B

1. Explain the concept of digital cross connect systems(DCS).
2. Explain the Elements of SS7 signaling with SS7 Architecture.
3. Explain in detail about NO:4 ESS toll switch.
4. Explain the concept of digital switching in an analog environment.
5. Explain the following.(i).STS switching. (ii)TST Switching.

   (iii)Time division switching(TDM).

6. Discuss the operation and application of digital crossconnect system.
7. Draw and explain a three stage nonblocking switching matrix and drive an expression for the minimum number of crosspoints required for nonblocking operation.
8. Discuss the Lee's method of blocking probability analysis.
9. Compare the single stage switching and multistage switching.
10. Explain the advantages of digital cross connect switches.
11. Explain the blocking probability and the minimum number of crosspoints required for non-blocking operation of a three stages space division switch.
12. Explain the operations of STS switch and derive the blocking probability and complexity of the same.
13. Discuss the issues and considerations in using digital switching in an analog environment.
14. Explain the principle of time division switching.
15. Discuss the concept of switch matrix control.
16. Discuss about the concept of two dimensional switching networks.
17. Explain the working operation of digital memory switch.

UNIT III
NETWORK SYNCHRONIZATION CONTROL AND MANAGEMENT
PART – B

1. What is meant by network synchronization? Briefly explain various techniques used to dead with the network synchronization issues.
2. Explain how PLL can measure timing jitter.
3. Explain the concept of pulse stuffing associated with asynchronous multiplexing.
4. Discuss the structure of M12 Multiplexer and demultiplexure.
5. Discuss the main source of clock instability in a digital network.
6. Discuss the principle of network control management.
7. Describr in detail about

    (i) Phase locked loop .   (ii) Jitter measurements.

    (iii) Systematic jitter.

8. Explain the basic approaches of network synchronization briefly and discuss the U.S network synchronization.
9. Disscuss the main sources of clock instability in a digital network.
10. Discuss about the concept of network timing performance measurement.

UNIT IV
DIGITAL SUBSCRIBER ACCESS
PART – B

1. Describr in detail about
    - (i)   Hybrid fiber coax systems
    - (ii) PCM modems.
    - (iii)   ISDN B and D channels.

2. Describe the Architecture of ISDN.

3. Explain the techniques used in high data rate digital subscriber loops.

4. Discuss the ASDL network configuration and also explain ASDL DMT with block diagram.

5. Short notes on.

    - (i)   Voice band modems.

(ii)   (ii) Digital Satellite services.

6. Discuss the principles of digital loop carrier systems.

7. Write short notes on :

(i)   ISDN U interface.
(ii)   PCM modems.
(iii)   ISDN B and D channels.

8. Explain three types of ISDN channels.Tabulate the specifications of all the channels.

9. Explain the following :

(i)   Local microwave distribution service.
(ii)   Fiber in the loop.

UNIT V
TRAFFIC ANALYSIS
PART – B

1. Explain finite queues and tandem queues.
2. Short notes on End to end blocking probabilities.

3. Rural telephone exchange normally experiences four call originations/min. What is the probability that exactly seven calls occur in an arbitrarily chosen interval of 20 seconds?

4. Explain the LCC systems with infinite sources and derive the Erlang B formula. What happens when the sources becomes finite?

5. Discuss the loss system.

6. Explain in detail about Delay systems.

7. Explain the following traffic characterizations:

(i)   Arrival distribution.
(ii)   Holding time Distribution.
(iii)   Lost call cleared systems.

8. Discuss about the last call cleared system and lost calls returning a system in switching system.

9. Describe the effect of blocking probability on the network traffic.

10. Discuss the application of delay systems in modeling and analyzing communication networks.

11. A group of 40 servers carry a traffic of 20 erlangs. If the average duration of a call is 6 minutes,calculate the numberof calls put through by a single server and the group as whole in a two hour period.

12. An Exchange serves 350 users. If average BHCA is 5000 and CCR is 70%, calculate the busy hour calling rate.

13. A switching system serves 20000 users with a traffic intensity of 0.1E per user. If there is a sudden increase in the traffic by 50%,what is the effect on the arrival rate.

14. Explain the arrival and service time distributions used in telecommunication traffic analysis.

15. Assuming each of 10,000 subscribe r lines originate one call per hour,how often do two calls arrive with less than 0.01 sec. between then?

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