

Code No: 07A60404

R07**Set No. 2**

III B.Tech II Semester Examinations, December 2010
TELECOMMUNICATION SWITCHING SYSTEMS AND NETWORKS
Electronics And Telematics

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Write a short notes on numbering plan?
 (b) Explain in detail the charging plan for Telecommunication Networks. [8+8]
2. Write short notes on the following:
 - (a) Connection oriented protocols
 - (b) Connection less protocols
 - (c) Data terminal equipment
 - (d) Data communication equipment. [4×4=16]
3. (a) Explain in detail about Asymmetric DSL
 (b) What is the concept of STS multiplexing and multiplexing? [8+8]
4. (a) What is the relationship between ISDN layers and OSI layers.
 (b) Discuss the function of ISDN Physical layer. [10+6]
5. (a) Explain the operation of Source routing bridge and compare with Transparent bridge.
 (b) Explain the process of en-capsulation and de-capsulation. [10+6]
6. (a) Draw the block diagram and explain the principle of basic time division time switching?
 (b) How many subscribers can be supported in bidirectional PAM switching bus, if the pulse width of the PAM sample is 125 ns? [10+6]
7. (a) With the help of neat block diagram explain the function of electronic switching system?
 (b) What are the advantages of DTMF dialing compared to pulse dial? [8+8]
8. (a) Define blocking probability and explain why it is called as time congestion.
 (b) An exchange is designed to handle 2000 calls during the busy hour. One day, the number of calls during the busy hour is 2200. What is the resulting GOS? [8+8]

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1. (a) Write a short notes on grade of service (GOS).
(b) Describe out band signaling scheme with E and M control. [8+8]
2. (a) What are the different source specific telecommunication networks? Explain.
(b) An electrical communication system uses a channel that has 20dB loss. Estimate the received power, if the transmitted power is one watt?
(c) What is the significance of S/N ratio being -3dB? [8+4+4]
3. (a) Describe functional groupings and reference points of ISDN.
(b) Discuss numbering and addressing formats of ISDN. [10+6]
4. Draw the block diagram of multipoint Data Communication Circuit and explain each block. [16]
5. (a) Explain Transparent & Non-Transparent fragmentation in the Internet .
(b) Compare datagram and virtual circuit switching. [8+8]
6. (a) Explain about the operation of echo suppressor with neat block diagram.
(b) What are the advantages and disadvantages of echo suppressors? [8+8]
7. (a) Explain about the popular methods employed in time division switching?
(b) A 1000-inlet and 1000-outlet digital switch is to be built using TSI. Determine the size of the control and data memories, and the speeds with which the memories have to be accessed. [8+8]
8. Write a note on
(a) Traditional Cable Networks
(b) DOCSIS. [8+8]

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1. (a) Explain the format of SONET Frames, Find transmission rates of STS - 1 and STS- 3 signals.
 (b) Compare SONET Layers with OSI Layers. [8+8]
2. (a) Define data communication standards and explain why they are necessary.
 (b) Describe syntax and semantics and how they relate to data communication. [8+8]
3. (a) Write short notes on Hierarchical routing.
 (b) Which of the OSI layer will break the transmitted bit streams into frames? Clearly explain. [8+8]
4. (a) Explain the functional architecture of ISDN.
 (b) What are the categories of Services Provided by ISDN? Explain. [8+8]
5. (a) What is the Duration Independent Charging and Duration Dependent Charging. Explain in detail.
 (b) A local loop has resistance of $5K\Omega$ and the telephone connected to it has an off hook resistance of 500Ω . Find the Loop Current and Voltage when the phone is:
 - i. On hook
 - ii. Off hook, the CB voltage is 48V. [8+8]
6. Write in detail about:
 - (a) Delay probability.
 - (b) Flow control.
 - (c) Quality of Service. [5+5+6]
7. (a) Explain the operation of input controlled and output controlled time division space switch with the help neat sketches?
 (b) A PABX is designed using an output-controlled digital time division space switch for supporting 128 subscribers. The transmission between the subscribers and the exchange is analog. On an average, 25 % of the subscribers are active simultaneously, compare the cost of output- controlled and memory-controlled configurations. [8+8]

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8. (a) What are crossbar switch configurations? Explain.
- (b) Estimate the number of crosspoints established to support 1000 local calls on non blocking basis and 100 trunk calls simultaneously. [10+6]

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R07**Set No. 3**

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Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
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1. (a) Briefly explain the Network Architecture of Data Communication Networks.
 (b) Write a short notes on Layered Network Architecture. [8+8]
2. (a) What are the Devices that enable users to access the services of BRI and PRI of ISDN? Explain.
 (b) Describe Physical layer specification of ISDN. [8+8]
3. (a) What is an ADSL explain in detail.
 (b) Explain the protocol defined by DOCSIS upstream. [8+8]
4. (a) Explain about the crossbar exchange organization with the help of neat block diagram ?
 (b) Define the following terms
 - i. Symmetric network
 - ii. Folded network
 - iii. Non blocking network
 - iv. Blocking network. [8+8]
5. (a) What are the charges for telephone call of 1, 3 and 5 minute durations on BSNL telephone network, from warangal to kavali which are separated by a radial distance of 312 km. Determine these values for peak hours and off peak hours?
 (b) A local loop has a resistance of $1\text{ k}\Omega$ and the telephone connected to it has an off hook resistance of 250Ω . Find the loop current and voltage when the phone is
 - i. ONHOOK
 - ii. OFFHOOK. The CB voltage is 48V. [8+8]
6. (a) Define overload traffic and explain different ways of handling it.
 (b) Over a 20-minute observation interval, 40 subscribers initiate calls. Total duration of the calls is 4800 seconds. Calculate the load offered to the network by the subscribers and the average subscriber traffic. [8+8]
7. (a) Compare and contrast standard Ethernet, Fast Ethernet and Gigabit Ethernet.

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- (b) What is looping problem in transparent Bridges? How is it avoided using spanning tree algorithm [8+8]
8. (a) Give TST switching network configuration and explain?
- (b) 1000 calling subscribers are to be connected with 1000 listeners, using a 3 stage switch. Find K and m to minimize the number of cross points. Calculate this minimum number. [8+8]

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