Code No: RR321701 **Set No.1**

III B.Tech. II Semester Regular Examinations, April/May -2005
TELECOMMUNICATION SWITICHING SYSTEMS & NETWORKS
(Electronics & Telematics)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Mention the typical centralized stored program control organization and mention various levels of controls
   (b) Given that MTBF = 2000 hours and MTTR = 4 hours calculate the un availability for single dual processor
2. What are the different configurations of combinational switches? Explain the working of 2- stage TS switch.
3. A traffic load of2 erlangs is offered to a full availability group of five trunks. (Full availability implies there is no restriction on the way in which calls are allocated particular trunks). The average call holding time is three minutes.
   (a) What is the probability that no calls arrive during five-minute period?
   (b) Determine the value of call congestion
   (c) Consider the case when the trunk numbered 1,2,3,4,5 and a call is allocated to the lowest numbered free trunk always. How much traffic does the first trunk carry? How much traffic does the last trunk carry?
4. (a) Explain in detail the charging plan for Telecommunication Networks?
   (b) A telephone administration provides leased lines at the rate of Rs 600 per Km for a minimum rental period of 3 months. A heavy point − to − point traffic user has his offices located 600Km apart and is confronted with the choice of using STD or leased lines. At what traffic to volume per day, should be move over to leased line? Assume 20 working days per month and a rate of Re.1 per unit recorded by the meter?
5. (a) Write about different forms of services provided by packet networks in data networks?
   (b) Explain about Data Communication Architecture?
6. Write in detail about Satellite Based Data Networks?
7. (a) What are the principles on which ISDN is based?
   (b) What are the factors responsible for the developments towards ISDN?
8. (a) Explain the numbering plan for ISDN?
   (b) Explain ISDN addressing?

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Code No: RR321701 **Set No.2**

III B.Tech. II Semester Regular Examinations, April/May -2005
TELECOMMUNICATION SWITICHING SYSTEMS & NETWORKS
(Electronics & Telematics)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. What are the main classes of application software of a switching system ? What are the contents of Terminal circuit connection file and Switching network configuration file?

2. (a) Derive an expression for the blocking probability of a TSTS switch if each stage is individually nonblocking
   (b) A TST switch supports 32 trunks of 32 channels each. A time expansion/ concentration factor of 2 and single stage space switch is used. What is blocking probability of the switch if channel loading is 0.9E per channel? Determine the cost of the switch?

3. (a) Define the following terms Busy hour call attempts(BHCA), Time Consistent busy Hour, Call completion rate (CCR), Traffic intensity.
   (b) An exchange serves 2000 subscribers. If the average BHCA is 10,000 and CCR is 60% , calculate the busy hour calling rate, average busy hour calls.

4. Explain in detail about Cellular Mobile Telephony?

5. Write in detail about End − to − End layers of ISO-OSI model with respect to data networks?

6. Write in detail about Fiber Optic Networks in data networks?

7. (a) Explain about the typical configuration of an electronic mail system and X.400 in the context of OSI model in ISDN?
   (b) Explain the two compression techniques in facsimile transmission standardized by CCITT in ISDN?

8. (a) Explain the numbering plan for ISDN?
   (b) Explain ISDN addressing?

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Code No: RR321701 **Set No.3**

III B.Tech. II Semester Regular Examinations, April/May -2005
TELECOMMUNICATION SWITICHING SYSTEMS & NETWORKS
(Electronics & Telematics)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Compare the functionality of telecommunication network, electrical communication system and an optical communication system?
   (b) A fully connected network supports full duplex communication using unidirectional links. Show that the total number of links in such a network with n nodes is $2^{*n}C_2$
2. What are the different configurations of combinational switches? Explain the working of 2- stage TS switch.
3. A traffic load of2 erlangs is offered to a full availability group of five trunks. (Full availability implies there is no restriction on the way in which calls are allocated particular trunks). The average call holding time is three minutes.
   (a) What is the probability that no calls arrive during five-minute period?
   (b) Determine the value of call congestion
   (c) Consider the case when the trunk numbered 1,2,3,4,5 and a call is allocated to the lowest numbered free trunk always. How much traffic does the first trunk carry? How much traffic does the last trunk carry?
4. (a) Explain about In channel signaling in Telecommunication Networks?
   (b) Discuss about Tropospheric Scatter Communications?
5. (a) Explain about Datagram Services in data networks?
   (b) Compare Circuit Switching and Packet Switching in data networks?
6. Discuss the major aspects in a LAN?
7. (a) What are the principles on which ISDN is based?
   (b) What are the factors responsible for the developments towards ISDN?
8. (a) Explain about ISDN− Bearer services?
   (b) Write about coexistence of ISDN with other networks?

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Code No: RR321701 **Set No.4**

III B.Tech. II Semester Regular Examinations, April/May -2005
TELECOMMUNICATION SWITICHING SYSTEMS & NETWORKS
(Electronics & Telematics)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. A 1000-line exchange is partly folded and partly nonfolded. Forty percent of the subscribers are active during peak hour. If the ratio of local to external traffic is 4:1,estimate the number of trunk lines required.

2. Describe briefly the following

   (a) Sequential write/ random read

   (b) Random write/ sequential read

   (c) Random input/ random output

3. (a) Define the following terms Busy hour call attempts(BHCA), Time Consistent busy Hour, Call completion rate (CCR), Traffic intensity.

   (b) An exchange serves 2000 subscribers. If the average BHCA is 10,000 and CCR is 60% , calculate the busy hour calling rate, average busy hour calls.

4. Explain in detail about Cellular Mobile Telephony?

5. Explain the data link frame structure? Explain different types of frames. Discuss in detail the ARQ protocols used for transmission and retransmission in data networks?

6. (a) Explain about IEEE 802.5 and IEEE 802.6 in data networks?

   (b) Discuss Internetworking in Data Networks?

7. (a) Give the advantages of Electronic Mail over Telex and explain the typical configuration of an electronic mail system in ISDN?

   (b) Explain in detail about X.400 message handling system model and different Email system configurations in ISDN?

8. (a) What is Artificial Intelligence? How to justify than an AI system is truly intelligent. Give some examples of Expert systems and their application areas in ISDN?

   (b) Explain in detail about the knowledge representation techniques to design an expert system in ISDN?

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