Code :R7320402

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III B.Tech II Semester(R07) Regular & Supplementary Examinations, April/May 2011
TELECOMMUNICATION SWITCHING SYSTEMS
(Electronics & Communication Engineering)

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) Mention the typical centralized stored program control organization and mention various levels of controls.

2. Give the basic time division time switching principle with the help of neat sketch. Distinguish between phased operation and slotted operation.

3. (a) Describe how a stochastic model is useful in modeling the behavior of a switching system.

   (b) Distinguish between renewal process and pure birth process.

4. (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.

5. (a) Define the following terms: data, data communications, data communication network and data communications circuits.

   (b) Describe peer-to-peer client/server network architecture.

6. (a) Discuss the advantages and disadvantages of LAN architecture.

   (b) Compute the maximum channel utilization for a MAN which uses CSMA mechanism and has a length of 100kms and operates at 200Mbps with a frame length of 2000bits.

7. (a) Explain the forms of videotex services adopted in ISDN.

   (b) Write a note on BISDN.

8. (a) Write a note on Digital Subscriber Line Technology.

   (b) Discuss SONET networks for high speed backbone and their advantages.

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Answer any FIVE questions
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1. (a) What are the elements of a switching system?

   (b) What are the advantages of automatic switching system over the manual exchanges?

   (c) What are the parameters involved in designing a switching system?

2. What are the different ways of controlling the time switch? Explain.

3. Explain the modeling of switching systems and delay systems.

4. Explain about In channel and common channel signaling in Telecommunication Networks.

5. (a) Define data communications network architecture.

   (b) List and describe the basic components that make up a data communications circuit.

6. (a) Discuss the connection oriented services of OSI reference model.

   (b) Explain the characteristic features of token passing bus LAN.

7. (a) Explain the interpersonal messaging services of User Agent Entity in detail.

   (b) What are the transmission channels provided by ISDN? Discuss.

8. (a) Write a note on ADSL.

   (b) How an automatic protection switching is implemented in SONET? Explain.

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(Electronics & Communication Engineering)

Time: 3 hours
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Answer any FIVE questions
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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 $2 \text{ x}^n C_2$.

2. (a) How the expanding and concentrating is obtained in time slot interchange, TSI, switch?

   (b) Explain the principle of time-multiplexed switches.

3. (a) What are the major components of telecommunication network? Explain in detail about subscriber loop systems.

   (b) An exchange uses a 40 V battery to derive subscriber lines. A resistance of 250 is placed in series with the battery to protect it from short circuits. The subscribers are required to use a standard telephone set which offers a d.c. resistance of 50. The microphone requires 23mA for proper functioning. Determine the farthest distance from the exchange at which a subscriber can be located if 26 AWG conductor is used.

4. Discuss about the signaling techniques in a Telecommunication Network.

5. (a) Draw a peer-to-peer client/server network and discuss their features.

   (b) Differentiate data terminal equipment and data communications equipment.

6. (a) Discuss the differences of message and packet switching networks.

   (b) Compare and contrast LAN & MAN networks.

7. (a) Describe the functions of facsimile system.

   (b) Why has the N-ISDN lagged behind? Discuss.

8. (a) What is ADSL? Explain about the modem used in ADSL.

   (b) What is meant by virtual tributaries? And what are their types?

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Time: 3 hours   Max Marks: 80

Answer any FIVE questions
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1. With neat block diagram, explain the working of centralized stored program control and distributed stored program control and compare its performances.

2. (a) How the expanding and concentrating is obtained in time slot interchange, TSI, switch?
   (b) What are the limitations of time multiplexed space switches?

3. Write short notes on:
   (a) Subscriber loop systems
   (b) Switching routing

4. (a) Derive the expression for incoming traffic using Poisson process.
   (b) A rural telephone exchange normally experiences 4-call origination per minute. What is the probability that exactly eight calls occur in an arbitrarily chosen interval of 30 seconds.

5. (a) Discuss the relationship between network architecture and protocol.
   (b) Describe the peer-to-peer data communication network.

6. (a) Explain the packet switching network with an example.
   (b) Differentiate between connection oriented & connectionless services.

7. (a) What are the key objectives of ISDN development?
   (b) Define basic and primary access services of ISDN.

8. (a) Explain how traditional cable networks are used for high speed access to internet?
   (b) Discuss the functions of each SONET layer.

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