B.Tech

(SEM VII) ODD SEMESTER THEORY EXAMINATION 2009-10
ELECTRONICS SWITCHING

Time : 3 Hours]   *[Total Marks : 100*

Note :   (1)   Attempt **all** questions.
             (2)   All questions carry **equal** marks.

1   Attempt any **four** parts of the following   5×4=20
     questions :

   (a)   Give the classification of switching systems.
          Compare manual exchange and automatic
          exchange.

   (b)   Draw a general trunking diagram for a switching
          system and explain the principle of reed relay.

   (c)   A link network is required to connect 64
          incoming trunks to 64 outgoing trunks. All its
          switches are to be of equal size and 64 links
          are to be provided at each stage, suggest a
          suitable size of switch to use in a two stage
          network.

   (d)   A four stage switching network for 1000
          incoming trunk and 1000 outgoing trunks using
          10×10 switches. How many cross-points does
          it contain ?

(e) Explain a blocking and nonblocking model of telephone traffic.

(f) Draw a three stage nonblocking configuration and define switching elements advantage ratio (λ).

2 Attempt any **four** parts of the following questions : 5×4=20

(a) Sketch an STS network to connect m incoming highways to m outgoing highways, each carrying n PCM channels and having k time switch links. Explain how it works.

(b) A TST network has ten incoming highways and ten outgoing highways, each carrying 32 PCM channels. The average occupancy of the incoming channel is 0.6E. Derive an equivalent space division network and estimate the blocking probability.

(c) A three stage switching structure having 128 input and 128 output terminals. For 16 first stage and 16 last stage, determine the number of cross points for nonblocking.

(d) Derive an expression for the blocking probability of a three stage switch using LEE probability graph.

(e) Enlist the important features of Digital switching.

(f) Write short notes on PBX switches and Digital cross connect units.

3 Attempt any **four** parts of the following questions : 5×4=20

(a) A rural telephone exchange normally experiences 4 call originations per minute. What is the probability that exactly 8 calls occur in an arbitrarily chosen interval of 30 seconds ?

(b) Compare call congestion and time congestion in a telephone network. During busy hours, 1400 calls were offered to a group of trunks and 14 calls were lost. The average call duration has 3 minutes. Calculate the total duration of period of congestion and GOS.

(c) Using Lee's graph for a three stage networks define switching elements advantage ratio (λ) and find out the no of switching elements S for N = 128.

(d) Discuss the modeling of a telephone traffic system as birth death process.

(e) Distinguish call congestion and time congestion. Enlist the examples of delay systems in telecommunications.

(f) Write short note on behaviour of loss system using blocking models.

4   Attempt any **two** parts of the following   10×2=20
        questions :

(a)   Draw a block diagram of common control switching system. Compare between Micro programmed control and Hard-wired control schemes for Electronic control.

(b)   Explain the various signalling techniques used in telephone networks. Discuss common channel signalling with SS7 architecture.

(c)   Explain how many modes configured in dual processor architecture. Draw a dual chain distributed control and discuss the levels of processing.

5   Attempt any **four** parts of the following   5×4=20
        questions :

(a)   Draw an ATM cell format and ATM header structure.

(b)   Define the classification of switching techniques used in PSTN and explain in brief.

(c)   Write short notes on ATM services with traffic parameters and types of connection.

(d)   Discuss the frame structure of HDLC and enlist the important features of it.

(e)   Sketch the TCP/IP reference model. How IP addressing is achieved ? Explain the address resolution protocol.

(f)   Write a short note on Banyan network switch.