S-10

B. Tech.

(SEM. VII) ODD SEMESTER THEORY EXAMINATION
2010-11
ELECTRONICS SWITCHING

Time : 3 Hours   *Total Marks : 100*

Note :   (1) Attempt **all** questions.

        (2) All questions carry equal marks.

        (3) In case of numerical problems assume data whenever not provided.

1.   Answer any **two** parts of the following :   **(10×2=20)**

   (a)   Define the basic elements of a switching system with the help of neat diagram. Discuss why digital telephonic is suitable for electronics exchange.

   (b)   Discuss the blocking probabilities using Lee Graphs and define an expression for the blocking probability of a three-stage switch in terms of the inlet utilization P.

   (c)   Enlist the various switching techniques in PSTN. Explain how packet switching is better than circuit switching for data communication system.

2.   Answer any **two** parts of the following :   **(10×2=20)**

   (a)   Explain the STS switching. Calculate the number of trunks can be supported on a time multiplexed space switch, given that (a) 32 channels are multiplexed in each stream, (b) control memory access time is 200 ns, (c) Bus switching and transfer time is 200 ns per transfer.

(b) Discuss a Digital Memory Switch in Time Division Switching. Determine the implementation complexity of the TS switch in Time space switching matrix, where the number of TDM input line N = 80. Assume each input line contain a single DS 1 signal (24 channels).

(c) Write short notes on (i) TSSST Switch, (ii) No. 4 ESS Toll Switch.

3. Answer any **four** parts of the following :   **(5×4=20)**

(a) Explain the traffic load and parameter for telephone networks.

(b) A subscriber makes 3 calls of duration of 8, 2, 4 minutes during 2 hours of a day. Calculate the BHCA and Erlang capacity of the exchange if all its 5000 subscribers have same traffic per hour and CCR of 80%.

(c) Discuss the Birth-Death process. Find out the equation which governs the dynamic of renewal process.

(d) Explain the Delay line system in telecom traffic.

(e) A traffic of 10E is offered to a group of trunks. It was observed that 5 calls were lost during busy hour and all the trunks remained busy for 16 sec. Find grade of service (GOS), traffic carried and average holding time.

(f) It was observed that one call arrives every 8 sec. Find the probability that during a period of 8 sec (a) two calls arrive, (b) more than two calls arrives, (c) no call arrives.

4. Answer any **four** parts of the following :   **(5×4=20)**

(a) Explain the concept of Centralized SPC and Distributed SPC with levels of processing.

(b) What are various types of software used for SPC working ?

(c) Discuss the concept of reliability and availability conditions of processors in Telecom Exchange.

(d) Explain the various techniques of providing redundancy in SPC exchange.

(e) Enlist the various signalling techniques used in telecom networks. Explain Common Channel Signalling with SS7 architecture.

(f) Explain the important features and frame structure of HDLC.

5. Answer any **two** parts of the following : **(10×2=20)**

(a) Define TCP/IP. Explain the basic techniques used in packet switching for routing control.

(b) Using block diagram discuss the following ways for LAN interconnect to implement a corporate wide area network : (a) Public X-2.5 Packet switching network, (b) Frame relay service.

(c) Write short note on ATM Memory Switch. Determine the memory speed required for an ATM switch fabric using shared-memory architecture in support of 12 STS-3 (OC-3) bidirectional ports.