

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0305

Roll No.

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### 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.