Paper Code: EEC-802 **Roll No.** | | | | | | | | | | |

B. Tech.
(SEM VIII) EVEN SEMESTER EXAMINATION, 2015-16
ELECTRONICS SWITCHING

[Time: 3 Hours] **[Max. Marks: 100]**

Note: - Attempt all questions. All question carry equal marks.

1. Attempt any four parts of the following :- **[5x4=20]**

(a) Define the basic elements of a switching system with the help of neat diagram.
(b) Discuss the evolution of digital switching system. Explain the block diagram of subscriber's line interface circuit for a digital exchange.
(c) With the help of suitable diagram describe the working of a Crossbar exchange.
(d) Enlist the various switching techniques in PSTN. Explain how packet switching is better than circuit switching for data communication system.
(e) Differentiate between Single stage and multistage networks.
(f) A three stage fully interconnected switching network is to connected 600 incoming trunks to 100 outgoing trunks. It is to use switches assembled from blocks of size 5x5. Design suitable networks and determine the number of switch blocks required.

2. Attempt any four parts of the following :- **[5x4=20]**

(a) Draw the functional blocks of a memory based time division switch and discuss the concept of time division time switching scheme.
(b) How many time slot interchange module are needed for an STS switch with 128 primary TDM signal 30 voice channel per input? Assume blocking to be less than0.002 and the loading is 0.2 Erlang per channel and determine the complexity of the switch.
(c) Discuss a Digital Memory Switch in Time Division Switching.
(d) Explain the concept of multi framing for PCM signalling in 30 channels with 2Mbit/s PCM system has 32 b-bit time slots.
(e) Four 32 channel TDM streams are multiplexed to from one input stream of an 8- stream TS switch. Determine the cost of the configuration including that of the multiplexers.
(f) Discuss the limitation of time division space switching and time slot interchange switch.

3. Attempt any four parts of the following: - **[5x4=20]**

(a) Explain the modelling of a telephone traffic system as birth-death process.
(b) A subscriber makes three phone calls of 3 minutes, 4 minutes and 2 minutes duration in a one hour period. Calculate the subscriber traffic in erlange, CCS, CM
(c) In an exchange, the calls arrive at the rate of 1100 calls per hour, with each call holding for duration of 3 minute. If the demand is serviced by a trunk group of 50 lines, calculate the grade of service (GOS)
(d) It was observed that one all 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.
(e) During the busy hour, 1200 calls were offered to a group of trunks and six calls were lost the average call duration was 3 minute. Find: (i) The traffic offered (ii) The traffic carried (iii) The traffic lost (iv)The grade of service (v) The total duration of the periods of congestion.
(f) Explain the Delay line system in telecom traffic.

4. Attempt any two parts of the following: - **[10x2=20]**

(a) (i) Explain the concept of centralized SPC and Distributed SPC with levels of processing.
(ii) Discuss the concept of reliability and availability conditions of processors in telecom exchange. Given that MTBF (mean time between failure) = 2000 hours and MTTR (mean time to repair) = 4hours, calculate the unavailability for single and dual processor system.

(b) (i) Differentiate between the characteristic of electronic control schemes (Micro programmed control and hard-wired control).
(ii) Discuss the blocking probabilities using Lee Graphs and define an expression for the blocking probability of three stage switch in terms of inlet utilization P.

(c) Enlist the various SignallingTechniques used in telecom networks.Explain Common Chanel Signalling with SS7 architecture.

5. Attempt any four parts of the following: - **[5x4=20]**

(a) Draw TCP/IP reference model. Explain how IP addressing is achieved.
(b) Explain the call establishment/release process in ATM using Virtual channel and Virtual paths.
(c) Write short note on ATM Memory Switch
(d) Explain the importance features and frame structure of HDLC.
(e) Using block diagram discuss the Public X-2.5 Packet switching network for LAN interconnects to implement a corporate wide area network.
(f) Draw and explain a 16X16 Banyan switching fabric.