

B.TECH.
(SEM V) THEORY EXAMINATION 2022-23
ELECTRONIC SWITCHING

Time: 3 Hours

Total Marks: 100

Note: Attempt all Sections. If you require any missing data, then choose suitably.

SECTION A

1. Attempt all questions in brief. 2x10 = 20

- (a) Enlist the component of telecommunication networks.
- (b) Explain the need of register-translator senders.
- (c) Discuss Combinational switching systems advantages over single stage switching systems.
- (d) Explain the principle of Time division switching.
- (e) Define the term GOS in Telecommunication Engineering.
- (f) Compare loss system and delay system with appropriate example.
- (g) Enlist different types of signaling.
- (h) Define the term Reliability and Availability of Switching Systems.
- (i) Describe Statistical Multiplexing.
- (j) Discuss X.25 Protocol in brief.

SECTION B

2. Attempt any three of the following: 10x3 = 30

- (a) Differentiate between Circuit switching and Packet switching.
- (b) Demonstrate the concept of analog time division switching & digital time division switching.
- (c) Analyze the different terms related to Network traffic load. And find out the load offered to the network by the subscriber and the average subscriber traffic, when over a 20-minute observation interval, 40 subscriber initiate calls. Total duration of the calls is 4800 seconds.
- (d) Classify the various signaling techniques used in telecommunication. List the purpose and features of SS7.
- (e) Explain the layered mechanism of Transmission Control Protocol/Internet Protocol (TCP/IP).

SECTION C

3. Attempt any one part of the following: 10x1 = 10

- (a) Describe a general Trunking system with neat diagram. Also discuss electronic switching networks.
- (b) Appraise the term switching system. With the help of diagram explain various elements of switching system.

4. **Attempt any *one* part of the following:** **10 x1 = 10**
- (a) Describe the concept of automatic switching system. Also explain space division and time division switching.
 - (b) Evaluate the Implementation complexity of 3048 channel TST switch with 18 TDM links and 138 channels. Let the time slot of space switch is 25.
5. **Attempt any *one* part of the following:** **10x1 = 10**
- (a) Explain birth-death process. During a busy hour 1400 calls were made to the group of trunks and 7 calls were lost. The average call duration was 2 minutes. Analyze traffic offered, traffic carried, traffic lost, GOS, total duration for periods of congestion.
 - (b) Discuss the equation of Grade of service and blocking probability of lost call cleared service (LCC).
6. **Attempt any *one* part of the following:** **10x1 = 10**
- (a) Describe the concept of reliability and availability conditions of processors in telecommunication exchange. Given that MTBF (Mean Time Between Failure) = 1000 Hrs and MTTR (Mean Time to Repair) = 5Hrs, calculate the unavailability for single and dual processor system.
 - (b) Demonstrate the concept of centralized SPC and distributed SPC.
7. **Attempt any *one* part of the following:** **10x1 = 10**
- (a) Describe Asynchronous Transfer Mode (ATM) cell and ATM Service Categories.
 - (b) Explain Banyan network switch. Also explain, why cell delay variation due to network is minimum in ATM.