Printed Pages: 02 **Sub Code: KEC055**

Paper Id: 231459 **Roll No.**

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) DiscussCombinational 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) Discussthe 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.