Code: DE62/DE113   Subject: **TELECOMMUNICATION SWITCHING SYSTEMS**

DipIETE – ET (Current & New Scheme)

Time: 3 Hours   **June 2019**   Max. Marks: **100**

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.
- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1   **Choose the correct or the best alternative in the following:**   **(2×10)**
   a. Strowger Switching System is
      (A) Fully Electronic Exchange   **(B)** Semi Electronic Exchange
      (C) Electromechanical Exchange   **(D)** Manual exchange

   b. Unit of traffic is
      (A) Danish   **(B)** Erlang
      (C) Milli Seconds   **(D)** Call hour

   c. The arrangement of trunks and switches within a telephone exchange is called its
      (A) Trunking   **(B)** switching
      (C) Occupancy   **(D)** Networking

   d. For single stage network with M inlets and N outlets the number of cross points
       are
      (A) MxN   **(B)** M+N
      (C) M/N   **(D)** MNxMN

   e. In digital transmission, with 8-kHz sampling rate, a sample occurs every
      (A) 125 microseconds   **(B)** 8 seconds
      (C) 8 microseconds   **(D)** none of these

   f. In digital time division switching
      (A) PAM samples are switched   **(B)** PCM binary samples are switched
      (C) Both **(A)** and **(B)**   **(D)** None of these

   g. In a network of electromechanical exchanges, signalling used is
      (A) Common Channel signalling   **(B)** channel associated signalling
      (C) Both **(A)** and **(B)**   **(D)** Any of these

   h. A number of trunks may request the use of a common control at the same time
      contention can arise. A circuit used to resolve this contention is called a
      (A) One-only selector   **(B)** an allotter
      (C) an arbiter   **(D)** all of these

i. For applications where the links in the network are known to have very low error rates, technique developed is
   (A) switching technique   (B) Small –error technique
   (C) Frame Relay   (D) None of these

j. A network having compatible digital transmission and switching is known as
   (A) Integrated Digital Network (IDN)   (B) Switching analog
   (C) Both (A) and (B)   (D) None of these

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. How Switching system are classified?   **(8)**

   b. Write functions of a switching System.   **(8)**

Q.3 a. Explain congestion for a telecommunication system, How it affects Grade of service?   **(6+3)**

   b. Define Loss systems in Tandem.   **(7)**

Q.4 a. Explain two stage network. Compare it with single stage network.   **(10)**

   b. Define Grades of service of link systems.   **(6)**

Q.5 a. Explain working of time multiplexed space switching. What is time slot?   **(8)**

   b. Calculate the maximum access time that can be permitted for the data and control memories in a TSI switch with a single input and single output trunk multiplexing 2500 channels. Also estimate the cost of the switch and compare it with that of a single stage space division switch.   **(8)**

Q.6 a. Describe processor architecture in a stored program control (SPC).   **(8)**

   b. Explain the terms reliability, availability, and security in switching systems.   **(8)**

Q.7 a. What are the principles of common channel signaling? Write it's advantages. **(10)**

   b. What are the basic signals that are required between exchanges for a simple telephone call?   **(6)**

Q.8 a. Differentiate between Frame Relay and X25 packet switching.   **(6)**

   b. How Ring networks operate? Explain their self healing capability.   **(10)**

Q.9 Write short notes on: **(8+8=16)**

   (a) Routing -General

   (b) Private Networks