ROLL NO. _____

DiplETE – ET (NEW SCHEME) – Code: DE62

Subject: TELECOMMUNICATION SWITCHING SYSTEMS

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

DECEMBER 2011

NOTE: There are 9 Questions in all.

- **Please write your Roll No. at the space provided on each page immediately after receiving the Question Paper.**
- **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. Network with point to point links among all nodes are known as_____

(A) Star **(B)** Fully connected
(C) Bus **(D)** Partially connected

b. Space division switching system belongs to _____system

(A) SPC system **(B)** Electromechanical
(C) Analog **(D)** Manual

c. The duration of call is called as _____

(A) Talking time **(B)** Busy time
(C) Holding time **(D)** Conversation time

d. The Traffic in Erlang is expressed as_____

(A) $\frac{CA}{T}$ **(B)** $\frac{Ch}{T}$
(C) $\frac{CT}{A}$ **(D)** $\frac{Th}{C}$

e. The technique of interconnection of multiples of switches is known as _____

(A) Inter-networking **(B)** Framing
(C) Trunking **(D)** Grading

f. The number of group selector for progressive grading is _____

(A) $g = \frac{2N}{K}$ **(B)** $g = \frac{2K}{N}$

(C) $g = \frac{K}{2K}$ **(D)** $g = \frac{2C}{K}$

g. Memory Address Register (MAR) of control memory uses _____counter

(A) 2^N **(B)** N/2
(C) 2N **(D)** MOD-N

h. Output Controlled Time Division Space Switch uses _____ for the outlets.

(A) cyclic control **(B)** control memory based
(C) random memory **(D)** None

i. Which of the following provides a wide variety of teleservices and bearer services over a common network via the local exchange and the customer's line

(A) PSTN **(B)** ISDN
(C) RCCS **(D)** LEC

j. In FDM system, the carriers are spaced at intervals of _____kHz

(A) 8 **(B)** 4
(C) 16 **(D)** 2

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

Q.2 a. Write the Strowger Trunking diagram of a 1000 line exchange and explain how connection between any two subscribers is established **(10)**

b. With neat diagram explain the working principle of 3×3 crossbar switch system. **(6)**

Q.3 a. Define: (i) Congestion (ii) Queuing System (iii) Lost Call System. Give their significance in Telecommunications Traffic. **(8)**

b. During busy hour 1500 calls were offered to a group of trunks and 5 calls were lost. The average call duration was 3 minutes. Find:
(i) The Traffic Offered (ii) Traffic Carried
(iii) Traffic Lost (iv) Grade Of Service. **(8)**

Q.4 a. With neat sketch explain:
(i) Progressive Grading (ii) Homogeneous grading. **(8)**

b. Find the Traffic Capacity of the two group grading shown in Fig.1, if the required Grade Of Service is 0.01 for K=10 and A_K=4.5 E. **(8)**

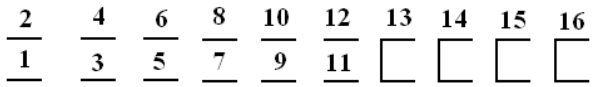

Fig. 1

Q.5 a. Explain with neat diagram, Time Multiplexed Space Switching system. **(10)**

b. Explain TST configuration. **(6)**

Q.6 a. Explain briefly various sequence of operations of call processing functions. **(10)**

b. Write the symbols used in State Transition diagram and explain their significances. **(6)**

Q.7 a. What is Multiframing Technique? Explain 30 channel PCM system. **(8)**

b. Explain briefly three types of signal units of HDLC protocol. **(8)**

Q.8 a. Explain briefly polling and random access modes of BUS network. **(8)**

b. Compare BUS and RING networks. **(8)**

Q.9 a. With neat sketch explain ISDN user network interface configuration. **(10)**

b. Write short note on National Numbering Scheme. **(6)**