

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)

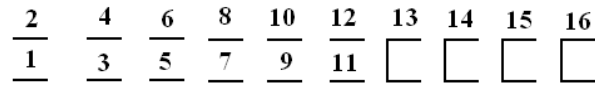


Fig. 1

- 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)