

DipIETE – ET (Current & New Scheme)

Time: 3 Hours

JUNE 2017

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. Reed Electronic System is :-
 (A) Fully Electronic Exchange
 (B) Semi Electronic Exchange
 (C) Mechanical Electronic Exchange
 (D) None of these
- b. The unit of traffic is :-
 (A) Erlang (B) Danish
 (C) Milli Seconds (D) Call Seconds
- c. During the busy hour, 1200 calls were offered to a group of Trunks and six calls were lost. The average call duration was three minutes. The grade of service is :-
 (A) 0.005 (B) 0.05
 (C) 0.5 (D) 0.025
- d. Erlang's ideal grading formula is :-
 (A) $N = AB^k$ (B) $N = AB$
 (C) $N = AB^{-1/k}$ (D) $N = A/B^k$
- e. In a single stage network for M inlets and N outlets the number of cross points are:-
 (A) $M*N$ (B) N^2
 (C) M^2N (D) MN^2
- f. If the incoming and outgoing highways are spatially separate, so which type of connection is required :-
 (A) Time switching (B) Space switching
 (C) Both (A) and (B) (D) None of these
- g. Availability is :-
 (A) $MTTR / (MTTF + MTTR)$ (B) $MTTF / (MTTF + MTTR)$
 (C) $MTTF / MTTR$ (D) $MTTR / MTTF$
- h. Which type of signaling uses the complete address information transferred from one register to the next as a single string of digit :-
 (A) Enbloc signalling (B) Link by link signalling
 (C) Multi frequency signalling (D) None of these

Code: DE62/DE113

Subject: TELECOMMUNICATION SWITCHING SYSTEMS

- i. The pure ALOHA protocol works well as long as the throughput of data is :-
 (A) Large (B) Small
 (C) Very Large (D) None of these
- j. A network having compatible digital transmission and switching is known as :-
 (A) IDN (B) PCM
 (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. What are the functions of a Switching system? (8)
 b. Explain principle of cross bar switching. (8)
- Q.3** a. Explain congestion and define grade of service. (6+2)
 b. A group of five trunks is offered 2 E of traffic. Find: (2×4)
 (i) The grade of service
 (ii) The probability that only one trunk is busy
 (iii) The probability that only one trunk is free
 (iv) The probability that at least one trunk is free
- Q.4** a. Explain grade of service for two stage network. (8)
 b. In a two stage switching network 25 E traffic is offered and the traffic is evenly distributed over the 10 outgoing routes. Find the grade of service and also find the traffic capacity of this network if the grade of service is not to exceed 0.01. (4+4)
- Q.5** a. Explain phased and slotted operation in time division time switching. Write difference between these two operations. (5+5+2)
 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. (2+2)
- Q.6** a. Describe stored program control (SPC) processor architecture. (8)
 b. What are the sequence of operation in call processing functions? (8)
- Q.7** a. What is common channel signalling? Write it's advantages. (1+7)
 b. Explain the meaning of the following terms applied to inter register signalling:-
 (i) En block signalling (ii) End to end signalling
 (iii) Overlap signalling (iv) Link by link signalling (2×4)
- Q.8** a. Write short note on ATM switches. (8)
 b. What are the bus networks for LAN and WAN? (8)
- Q.9** a. Explain Integrated services digital network. (ISDN) (8)
 b. Describe Cellular radio network. (8)