

DiplETE – ET (Current & New Scheme)

Time: 3 Hours

JUNE 2016

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. In a folded network with 250 subscribers, there can be a maximum of _____ simultaneous calls or information interchanges.

(A) 50	(B) 125
(C) 250	(D) 1225
- b. An exchange serves 5000 subscribers. If the average BHCA is 10,000 and the CCR is 70%, calculate the BHCR

(A) 1.4	(B) 7000
(C) 14	(D) 0.7
- c. Which types of samples are switched in time division manner, in analog time division switching?

(A) PCM	(B) PWM
(C) PAM	(D) None of these.
- d. Adding/removing of node in this topology does not disturb the activity of whole network.

(A) Ring	(B) Bus
(C) Mesh	(D) Star
- e. Traffic intensity is measured in:

(A) Erlang	(B) CCS
(C) CM	(D) All of these
- f. In-channel signalling is also known as:

(A) Per-trunk signalling	(B) Direct control signalling
(C) Common control signalling	(D) Subscriber line signalling
- g. The recommended value for GOS in India is _____

(A) 0.0002	(B) 0.2
(C) 0.002	(D) 0.02
- h. Primary Rate Access of ISDN is:

(A) 64 kbps	(B) 144 kbps
(C) 32 kbps	(D) 2 Mbps

Code: DE62/DE113 Subject: TELECOMMUNICATION SWITCHING SYSTEMS

- i. Unavailability of processor in SPC system is given by
 (A) $MTTR / (MTTF+MTTR)$
 (B) $MTTF / (MTTF+MTTR)$
 (C) $(MTTF+MTTR) / MTTR$
 (D) $(MTTR+MTTF) / MTTF$
- j. FDDI stands for
 (A) Frequency Division Data Interface
 (B) Fiber Distributed Data Interface
 (C) Frequency Division Duplex Interface
 (D) Fiber Double Data Interface

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

- Q.2** a. Draw the classification of switching systems. (2)
 b. Draw schematics of a switching system showing logical connections between different elements of the system and explain it briefly. (7)
 c. Why network with point to point link is impractical? Explain necessity of switching systems. (7)
- Q.3** a. With help of a graph, explain typical telephone traffic pattern of a telephone exchange serving the whole town. (8)
 b. A subscriber makes four phone calls during an hour. The time durations of these calls are 12 minutes, 40 seconds, 3 minutes and 1 minute. Find subscriber traffic in Erlang, Call Minutes (CM), Call Seconds (CS) and Centum Call Seconds (CCS). (4)
 c. Define: (i) Queuing Systems (ii) Lost-call Systems (4)
- Q.4** a. With neat sketch explain: (i) Skipped Grading (ii) Homogeneous grading. (8)
 b. Design a three-stage network for connecting 100 incoming trunks and 400 outgoing trunks. (8)
- Q.5** a. Explain basic time division space switching with neat figure. (8)
 b. What is combination switching? Explain briefly (8)
- Q.6** a. Enlist the sequence of operations that takes place in which the calling and called subscribers' lines and the connections to them change from one state to another. (8)
 b. Given that $MTBF = 2000$ hours and $MTTR = 4$ hours, calculate the availability and unavailability for (i) single and (ii) dual processor systems. (8)
- Q.7** a. Define CCS. What are the advantages of CCS? (8)
 b. Write a short note on HDLC with its frame structure. (8)
- Q.8** a. Explain the principle of packet switching with figure. (8)
 b. Explain the working of token ring network. (8)
- Q.9** Answer ANY TWO: (8×2)
 (i) Charging in telecommunication network
 (ii) International numbering plan
 (iii) ISDN channels