

DipIETE – ET (Current & New Scheme)

Time: 3 Hours

June 2018

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. The duration of call is called _____.

(A) Busy time	(B) Holding time
(C) Talking time	(D) Convocation time
 - b. Typical human voice is centered on frequency range _____ Hz.

(A) 200 – 400	(B) 280 – 3000
(C) 400 – 800	(D) 1500 – 1800
 - c. Busy hour traffic is the

(A) Maximum average simultaneous traffic.	(B) The duration of maximum calls.
(C) Traffic during peak hour.	(D) Traffic when all subscribers are engaged.
 - d. MSC in cellular radio network stands for

(A) Mobile Station Center	(B) Mobile Switching Center
(C) Mobile Sim Center	(D) Mobile Service Center
 - e. In a 100 line folded network, how many switching elements are required for a non-blocking system.

(A) 25	(B) 100
(C) 200	(D) 50
 - f. Common channel signaling:

(A) Uses the speech or data path for signalling.	(B) Does not use the speech or data path for signalling.
(C) Needs no additional transmission facilities.	(D) Finds it difficult to handle signalling during speech.
 - g. The is a circuit-switched network, while the is a packet-switched network.

(A) Telephone, ATM	(B) SONET, FDDI
(C) Satellite, Telephone	(D) FDDI, SONET

Code: DE62/DE113

Subject: TELECOMMUNICATION SWITCHING SYSTEMS

- h. ISDN handles data pertaining to
 (A) All digital services (B) Speech and Video
 (C) Computer data only (D) Speech only
- i. SPC stands for
 (A) Standard Protocol Control (B) Stored Program Control
 (C) Signalling Process Centre (D) Strong Processor Control
- j. In an exchange with 2000 subscribers, 10000 calls are attempted during a busy hour. The call completion rate of an exchange is 60%. Calculate the busy hour calling rate.
 (A) 5 (B) 4
 (C) 2 (D) 3

Answer any FIVE Questions out of EIGHT Questions.

Each question carries 16 marks.

- Q.2** a. What is centralized SPC, what are its modes of operation; explain the working of stand-by mode? (8)
 b. Discuss the various functions of telephone switching systems in brief. (8)
- Q.3** a. What is Traffic Engineering? Define the term busy hour, traffic intensity and grade of service. (8)
 b. A call processor in an exchange that requires 120 ms to service a complete call. What is the BHCA rating for the processor? If the exchange is capable of carrying 700 Erlangs of traffic, what is the call completion rate? Assume an average call holding time of 2 minutes. (8)
- Q.4** a. List the major difference in single stage, two stages and three stages networks. Also discuss their blocking characteristics. (8)
 b. What are the different types of distributing frames used in exchanges? Explain their importance with figure. (8)
- Q.5** a. What is time division switching? Explain basic time division space switching with neat figure. (8)
 b. Explain briefly the combination switching. (8)
- Q.6** a. Draw and label (timings and frequency) the different signaling tone waveforms used in telephony. (8)
 b. Given that MTBF = 2000 hours and MTTR = 5 hours, calculate the availability and unavailability for (i) single and (ii) dual processor systems. If system is made to work for 40 years, calculate the A and U for both the systems. (8)
- Q.7** a. Compare in-channel signalling with common channel signalling. Which is more advantageous? (8)
 b. Explain what is DTMF signalling. (8)
- Q.8** a. What is the difference between message switching and packet switching? Explain the principle of packet switching with figure. (8)
 b. Write a note on optical fiber networks. (8)
- Q.9** Write short note on: (2x8)
 (i) Broadband ISDN (ii) Private Networks