

DiplETE – ET

Time: 3 Hours

JUNE 2013

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 as _____

- | | |
|----------------------|----------------------|
| (A) The talking time | (B) Busy time |
| (C) Holding time | (D) Convocation time |

b. SLIC stands for _____

- (A) Subscriber Line Interface Circuit
 (B) Standard Line Interface Circuit
 (C) Standard Length Interchange Code
 (D) Subscriber Line Integrated Circuit

c. During busy hours 1800 calls were offered with average call duration of 3 min, the traffic offered is _____

- | | |
|--------|--------|
| (A) 60 | (B) 90 |
| (C) 30 | (D) 15 |

d. For a lost call system the Grade of Service B is _____

- | | |
|--|---|
| (A) $\frac{\text{Number of calls lost}}{\text{Number of calls offered}}$ | (B) $\frac{\text{Number of calls offered}}{\text{Number of calls lost}}$ |
| (C) $\frac{\text{Traffic offered}}{\text{Traffic carried}}$ | (D) $\frac{\text{Number of calls carried}}{\text{Number of calls offered}}$ |

Code: DE62 Subject: TELECOMMUNICATION SWITCHING SYSTEMS

e. The Erlang's first distribution formula $E_{1,N}(A)$ is defined as _____

(A) $\frac{A^K / K!}{\sum_{K=0}^N A^K / K!}$

(B) $\frac{\sum A^N / N!}{A^K / K!}$

(C) $\frac{e^N / N!}{\sum_{K=0}^N A^K / K!}$

(D) $\frac{A^N / N!}{\sum_{K=0}^N A^K / K!}$

f. A distributed network configuration in which all data pass through a central computer is _____

- (A) Bus Network
(C) Ring Network

- (B) Star Network
(D) Point to point Network

g. Memory Address Register of control memory of N trunk line uses _____ counter

- (A) MOD- 2^N
(C) MOD-2N

- (B) MOD- N^2
(D) MOD-N

h. Availability of processor in SPC system is given by _____

(A) $\frac{MTTF}{MTTF + MTTR}$
(C) $\frac{MTTF + MTTR}{MTTF}$

(B) $\frac{MTTR}{MTTF + MTTR}$
(D) $\frac{MTTF + MTTR}{MTTR}$

i. In outband signalling, frequencies from _____ kHz to _____ kHz are used for signalling

- (A) 3.2, 3.8
(C) 3.7, 3.85

- (B) 3.8, 4.4
(D) 3.2, 3.65

j. Basic Rate Access of ISDN is _____

- (A) 64 Kbps
(C) 1.5 Mbps

- (B) 144 Kbps
(D) 2 Mbps

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

Q.2 a. Explain briefly various types of switching systems. (4)

b. Design 10,000 line exchange and show the connection between subscriber 5219 to 8762. (8)

c. Explain the operation of reed relay with the help of a neat diagram. (4)

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- Q.3** a. What is congestion? How GOS is affected by congestion? (6)
- b. During busy hour, 900 calls were offered to a group of trunks and 3 calls were lost. If the average call duration is 3 min, find:
- | | | |
|---------------------|-----------------------|-----|
| (i) Traffic Offered | (ii) Traffic Carried | |
| (iii) Traffic Lost | (iv) Grade Of Service | (6) |
- c. A group of 20 Trunks provide a GOS of 0.01, when offered 12E Traffic, then how much is the GOS improved if one extra trunk is added to the group. (4)
- Q.4** a. With neat sketch, explain various grading system. (8)
- b. Design a grading for connecting 20 Trunks to switches having 10 outlets. (8)
- Q.5** a. Briefly explain the time division space switch with the help of neat diagram. Also discuss its merits. (8)
- b. Describe 3 stage TST combination switching network. (8)
- Q.6** a. Explain processor configurations used in SPC system. (8)
- b. Discuss the steps involved in making a local call in signal exchange. (8)
- Q.7** a. What is Inband Signalling System and explain its operation with the help of a neat diagram. (8)
- b. With neat sketch, explain Multi Framing Process of 30 channel PCM system. (8)
- Q.8** a. Write short note on Datagram and virtual circuits. (8)
- b. Compare BUS and RING networks. (8)
- Q.9** Write short note on the following:
- | | |
|-----------------------------------|-------|
| (i) Automatic Alternative Routing | |
| (ii) Cellular Networks | (2×8) |