DipIETE – ET (OLD SCHEME)

Code: DE20 **Subject: ELECTRONIC SWITCHING SYSTEMS**
Time: 3 Hours **Max. Marks: 100**

DECEMBER 2009

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.**
- **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 larger grade of service indicates

(A) Larger number of calls lost
(B) Larger number of calls offered
(C) Larger number of calls carried
(D) None of these

b. Traffic intensity can be measured in

(A) Erlangs **(B)** CM
(C) CCS **(D)** All of above.

c. The CCITT standard bandwidth for speech is

(A) 3400 Hz **(B)** 15 kHz
(C) 20 kHz **(D)** 5 kHz

d. The final selector is connected to the

(A) Calling subscriber **(B)** Switching Network
(C) Line Finder **(D)** Called subscriber

e. Which transmission media is used for data communication over telephone lines

(A) Twisted pair lines **(B)** Co-axial cables
(C) Communication satellite **(D)** All of above

f. The analog signal needs to be sampled at a minimum sampling rate of

(A) 2fs **(B)** ½ fs
(C) fs/2 **(D)** 2/fs

g. A distributed network configuration in which all data/ information pass through a central computer is

(A) Bus Network **(B)** Ring Network
(C) Star Network **(D)** Point to Point Network

h. When a switch capacity is full, calls coming into switch one said to be

(A) Open **(B)** Shorted
(C) Blocked **(D)** Shunted

i. In DTMF phone, digits are represented by

(A) Orthogonal frequency **(B)** Orthogonal phase
(C) Orthogonal codes **(D)** Orthogonal pulses

j. A master group consists of

(A) 12 voice channels **(B)** 24 voice channels
(C) 60 voice channels **(D)** 300 voice channels

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

Q.2 a. Using suitable diagram explain the principle of crossbar switching. **(8)**

b. On average, during the busy hour, a company makes 120 outgoing calls of average duration 2 minutes. It receives 200 incoming calls of average duration 3 minutes. Find:

(i) Outgoing traffic
(ii) The incoming Traffic
(iii) The total traffic **(8)**

Q.3 a. List different layers of the OSI model. Explain briefly their function. **(8)**

b. Explain briefly function of a switching system. **(8)**

Q.4 a. What is common channel signalling? State its advantages. **(8)**

b. Draw comparison between single stage and multistage network. **(8)**

Q.5 a. Draw the block diagram of CCITT number 7 signalling system. Explain functions of different levels. **(8)**

b. With the help of block diagram describe a typical centralized SPC. **(8)**

Q.6 a. Describe briefly the operation of different topologies in Local Area Network. **(8)**

b. What are concentrators? Explain how it helps in connecting number of subscribers. **(8)**

Q.7 a. Explain DTMF signalling. **(8)**

b. What is the difference between message switching and packet switching system? Explain typical message data bits. **(8)**

Q.8 a. Explain following terms: **(8)**

(i) Trunk circuit
(ii) Exchange

b. Describe cables hierarchy used for subscriber loop. **(8)**

Q.9 a. Explain how multiplexed space switch works in time multiplexed time switching. **(8)**

b. Explain grade of service and blocking probability briefly. **(8)**