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

DECEMBER 2010

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 half an hour 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. Tropospheric scattering is used with frequencies in the following range

   (A) HF   **(B)** VHF
   (C) UHF   **(D)** VLF

b. The OSI layer which is concernd with File transfer protocol ,simple mail protocol and terminal protocol is

   (A) Data link layer   **(B)** Transport layer
   (C) Network layer   **(D)** Application layer

c.   A dual processor architecture may be configured to operate in a

   (A) stand by mode only   **(B)** synchronous duplex mode only
   (C) load sharing mode only   **(D)** one of the above three mode

d. Erlang is used to

   (A) Measure busy period   **(B)** Give total busy period in minutes
   (C) Measure average call rate   **(D)** Indicate total call period

e. The ratio of lost traffic to offered traffic is

   (A) Traffic Density   **(B)** Grade of service
   (C) Busy hour   **(D)** Load factor

f.   The call in progress tone is a

   (A)   400 Hz or 800 Hz intermittent pattern
   (B)   bursty 400 Hz with silent period in between
   (C)   33 or 50 or 400 Hz continuous tone
   (D)   400 Hz continuous tone

g. Switching processor is

(A) level 1 processor   **(B)** level 2 processor
(C) level 3 processor   **(D)** none of the above

h. The SCCP supports

(A) routing to subsystems   **(B)** global title translation
(C) load sharing among SCPs   **(D)** all of the above and other functions
                                             as well

i. The Nyquist's theorem which applies to noiseless channel and states

(A) $R= 2H \log_2 /V$ **(B)** $R= H \log_2 V$
(C) $R= 2H \log_2 V$ **(D)** $R= H \log_2 V$

j. The _____is a circuit-switched network, while the _____is a packet-switched network.

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

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

Q.2 a. What are the functions of telephone switching system? **(6)**

b. What are the advantages and disadvantages of automatic telephony over the manual telephony **(6)**

c. What is STD ? List the symbols used in STD. **(4)**

Q.3 a. What is Stored Program Control (SPC) exchange? Explain the functioning of Centralized SPC. **(8)**

b. Explain the sequence of operations in call processing functions, commencing from Idle state, call request signal till clear signal. **(8)**

Q.4 a. What is DTMF? Explain , in details, how it works. **(8)**

b. With the help of a neat diagram, explain the elements of a switching system. **(8)**

Q.5 a. What are the three forms of signalling? Compare in-channel signalling with common channel signalling. **(8)**

b. What is return loss? Show that there will be no reflected signal if the two networks consisting of 4 wire circuit and 2 wire circuit are perfectly balanced. **(8)**

Q.6 a. What is LAN? Explain the widely used topologies in LAN. **(8)**

b. During busy hour,1200 calls were offered to a group of trunks and 6 were lost. The average call duration (holding time) was 3 minutes. Find

    (i) traffic offered   (ii) traffic lost

    (iii) traffic carried   (iv) grade of service   **(8)**

Q.7   a. Distinguish between single stage and multistage networks   **(8)**

    b. Draw and explain the architecture of Signalling system No.7. Explain various levels used in such a system.   **(8)**

Q.8   a. Explain the role of concentrator.   **(8)**

    b. Find the no. of switching elements required in single stage and three stages networks for a 30000 line non blocking exchange. Also find the switching element advantage ratio λ.   **(8)**

Q.9   a. Using Lee's graphs derive the expression for blocking probability of a two-stage networking.   **(7)**

    b. A switching system serves 10000 subscribers with a traffic intensity of 10.E per subscriber. If the average traffic increased by 50%, what is the effect on the arrival rate?   **(5)**

    c. Define the term busy hour and traffic intensity.   **(4)**