Code: AE64   Subject: TELECOMMUNICATION SWITCHING SYSTEMS

AMIETE – ET (NEW SCHEME)

Time: 3 Hours　　　　　　　| JUNE 2012 |　　　　　　　**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 hardware used for establishing connection between inlet and outlet pair is called:

　　　　(A) Switching network　　　　　**(B)** Switching subsystem
　　　　(C) node　　　　　　　　　　　**(D)** channel

　　b.　The minimum number of switching elements in 3 stage non-blocking configuration is given by:

　　　　(A) $2N \sqrt{2N}$　　　　　　　**(B)** $\sqrt{N}$
　　　　(C) $4N \sqrt{2N}$　　　　　　　**(D)** N^2

　　c.　GOS is also called

　　　　(A) Time congestion　　　　　**(B)** call congestion
　　　　(C) Blocking probability　　　　**(D)** delay probability

　　d.　Signaling technique that uses same channel to pass user voice or data to pass control signals related to that connection is called :

　　　　(A) Common channel signalling　　**(B)** interregister signalling
　　　　(C) line signalling　　　　　　　**(D)** Inchannel signaling

　　e.　For a dual processor system, unavailability is given by :-

　　　　(A) $U = \dfrac{MTBF}{MTBF + MTTR}$　　　　**(B)** $U = \dfrac{MTTR}{MTTF + MTTR}$

　　　　(C) $U = \dfrac{MTBF}{MTTR}$　　　　　　　　**(D)** $U = \dfrac{MTBF + MTTR}{MTBF}$

---

f. Data Transmission using PSTN is an example of :

(A) Circuit switching   **(B)** Message Switching
(C) packet switching   **(D)** Datagram services

g. In band VF signaling uses frequency band of

(A) 2600Hz-4000 Hz   **(B)** 30-100 KHz
(C) 300-3400 Hz   **(D)** More than 34 KHz

h. For digital switches, 2 wire to 4 wire conversion can be performed by:

(A) D/A converter   **(B)** hybrid
(C) Cross point switch   **(D)** digital cross connect

i. The total number of bytes in ATM cell is:

(A) 56 bytes   **(B)** 50 bytes
(C) 53 bytes   **(D)** variable

j. Store and forward systems behave as:

(A) delay systems   **(B)** loss systems
(C) both   **(D)** None of above

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

Q.2   a.   With help of Block diagram, explain the function of element of a Switching system.   **(8)**

b.   Design a 1000 line exchange and explain its function.   **(8)**

Q.3   a.   On average, one call arrives every 5 seconds during a period of 10 seconds, what is the probability that:
   (i)   No call arrives?   (ii)   One call arrives?
   (iii)   Two call arrives?   (iv)   More than two call arrives?   **(4)**

b.   Define
   (i)   The unit of traffic   (ii)   Congestion
   (iii) Busy hours.   **(8)**

c.   In a telephone system, the average call duration is 2 minutes. A call already lasted 4 minutes. What is the probability that
   (i)   The call will last at least another 4 minutes.
   (ii)   The call will end within the next 4 minutes?   **(4)**

Q4   a.   With the help of neat sketch, Explain the function of three stage Switching Networks. **(8)**

   b.   Design a two stage Switching Network for connection 200 incoming trunk to 200 outgoing trunks. **(8)**

Q.5   a.   With the help of neat sketch, explain the function of Basic time division time switching. **(8)**

   b.   Explain the working principle of Time Multiplexed Space Switching. **(8)**

Q.6   a.   What is State transition diagram? Draw and explain the Symbols used in State transition diagrams. **(8)**

   b.   What is distributed SPC? Explain the function of Dual Chain distributed Control. **(8)**

Q.7   a.   With neat sketch, explain the audio-frequency junction and trunk circuit. **(8)**

   b.   With the help of neat sketch, explain the Inter Register Signalling. **(8)**

Q.8   a.   Explain the function of Ring network. Compare it with bus network. **(8)**

   b.   Explain the function of General and the synchronous transfer mode in broadband network. **(8)**

Q.9   a.   With the help of neat sketch, explain the function of intelligent networks. **(8)**

   b.   With help of diagram, explain the function of Analog networks. **(8)**