ROLL NO. _____

Code: AE64 Subject: TELECOMMUNICATION SWITCHING SYSTEMS

AMIETE – ET (NEW SCHEME)

Time: 3 Hours **DECEMBER 2011** **Max. Marks: 100**

NOTE: There are 9 Questions in all.

- **Please write your Roll No. at the space provided on each page immediately after receiving the Question Paper.**
- **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. In a folded network with N subscribers, there can be maximum of _____ simultaneous calls.

(A) N/4 **(B)** N
(C) N/2 **(D)** 2N

b. The letter B and S in BORSCHT stands for

(A) Batteryfeed & Supervisory Signalling
(B) Battery low & Security Alarming
(C) Bus Voltage & Signal Voltage
(D) Busy line Test & Supervision

c. The larger the grade of service _____ is the service to customer

(A) Better **(B)** Worse
(C) No change **(D)** None

d. Poission distribution formula for call arrived in a given time is

(A) $P(x)=\frac{A^x}{x!}e^{-A}$ **(B)** $P(x)=\frac{T^x}{x!}e^{-T}$

(C) $P(x)=\frac{\mu^x}{x!}e^{-\mu}$ **(D)** $P(x)=\frac{C^x}{x!}e^{-x}$

e. The total number of crosspoint required for two stage connection is

(A) $2N$ **(B)** $2\sqrt{2N}$

(C) $2N^2$ **(D)** $2N^{3/2}$

f. A fully connected three stage network requires large number of cross point when _____

(A) Network is blocking **(B)** N is large
(C) N is low **(D)** None of the above

g. Availability of processor in SPC system is given by

(A) $\frac{MTTF}{MTTR}$ **(B)** $\frac{MTTR}{MTTF}$

(C) $\frac{MTTF}{MTTF + MTTR}$ **(D)** $\frac{MTTR}{MTTF + MTTR}$

h. In outband signalling, frequencies from _____ KHz to _____ KHz are used for signalling.

(A) 3.2, 3.8 **(B)** 3.8, 4.4
(C) 3.7, 3.85 **(D)** 3, 3.6

i. In circuit switched system all attempts to make call over a congested group of trunks are _____

(A) Lost **(B)** Delayed
(C) Successful **(D)** None

j. In strowger exchange Final selector is used to select _____ digits of customer number

(A) First two **(B)** Last two
(C) Centre two **(D)** None

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

Q.2 a. With neat sketch explain functioning of a uniselector switch. **(6)**

b. Design a 10,000 line exchange, show the connection between subscriber 9348 and 5569. **(10)**

Q.3 a. Define
(i) Erlang (ii) Holding time
(iii) Grade of service **(8)**

b. A group of 10 Trunks provide a grade of service of 0.01 when offered 10E of Traffic.
(i) How much is the grade of service improved if one extra trunk is added in the group?
(ii) How much does the grade of service deteriorate if one trunk is out of service? **(8)**

Q4 a. What is grading? Write merits and demerits of grading. **(8)**

b. Design a grading for connecting 20 trunks to switches having 10 outlets. **(8)**

Q.5 a. Design Input controlled Time division space switch for 256 connection. **(10)**

b. Explain the working principle of Time slot Interchange switch. **(6)**

Q.6 a. Give signal exchange diagram for a local call and explain briefly. **(8)**

b. Explain processor configuration used in SPC system. **(8)**

Q.7 a. With neat sketch of out band signalling system, explain its working principle. **(8)**

b. Draw block schematic of CCITT no.7 signalling system and explain briefly. **(8)**

Q.8 a. Explain the principle of packet switching. Compare it with circuit switching. **(8)**

b. List the features of ATM and explain the basic function of ATM switch. **(8)**

Q.9 a. With neat sketch explain integrated digital network. **(10)**

b. Explain the principle of cellular radio system. **(6)**