Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. Sem. – IInd - Examination – June/July- 2011
Subject code: 1720401
Subject Name: Telecom Switching System, Networks and Network Management

Date:22/06/2011 **Time: 10:30 am – 01:00 pm**
Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Discuss various switching network configurations. **03**

(b) Prove that unavailability of a dual processor system, $U_D = 2(MTTR)^2 /(MTBF)^2$. **03**

(c) Derive the blocking probability of two stage network. **04**

(d) Briefly explain five-stage switching network. **04**

Q.2 **(a)** A three stage switching network supports 128 inlets and outlets. It is supposed to use 16 first stage and third stage matrices. **07**

i) What is the number of switching elements in the network if it is nonblocking ?

ii) At peak periods, the occupancy rate is 10%. If the number of switching elements required for nonblocking is reduced by a factor of 3, what is the blocking probability of the network ?

(b) Draw the Lees' probability graph for ST switch. What is he blocking probability if the input channel loading is 0.2 erlang(E) and space and time stages are symmetrical with N=8 and M=32. **07**

OR

(b) i) Explain Time slot interchange switch w.r.t Time multiplexed Time Switching. **04**

ii)Calculate the maximum access time that can be permitted for the data and control memories in a TSI switch with a single input and single output trunk multiplexing 2500 channels. Also, estimate the cost of the switch and compare it with that of a single stage space division switch. **03**

Q.3 **(a)** Explain parallel-in/serial-out configuration of time multiplexed time switching. **07**

(b) i) How is the telephone traffic pattern on a working day? Define different busy hours. **04**

ii) Over a 20 minute observation interval, 40 subscribers initiate calls. Total duration of the calls is 4800 seconds. Calculate the load offered to the network by the subscribers and the average subscriber traffic. **03**

OR

Q.3 **(a)** Discuss Birth-death processes in detail. **07**

(b) i) Explain Grade of service of a lost calls cleared system with finite subscribers. **04**

ii) In a telephone system, there are 20 servers and 100 subscribers. On an average, there are 10 busy servers at any time. The probability of all servers being busy is 0.2. Calculate the grade of service assuming a) Erlang traffic and b) Engest traffic. **03**

Q.4 **(a)** i) What are different organization models of SNMP management? **04**

ii) Show the numbering convention of Managed object Table in $SNMP_V1$. **03**

(b) Discuss $SNMP_V2$ network management architecture. List the changes introduced in the architecture of $SNMP_V2$ w.r.t $SNMP_V1$. **07**

OR

Q.4 **(a)** Briefly explain various applications of $SNMP_V3$. **07**

(b) i) Show the message format of $SNMP_V3$. **03**

ii) Discuss privacy and authentication services for an incoming and an outgoing message. **04**

Q.5 **(a)** Explain RMON1 groups and functions with the help of a block diagram. **06**

(b) Discuss the following. **08**

i)ATM Remote Monitoring

ii)SMI Transactions

OR

Q.5 **(a)** What are the challenges in managing a network ? **04**

(b) Write short notes on: **10**

i) ATM LANs

ii) TCP/IP layers

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