Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Sem-II Remedial Examination December 2010

Subject code: 720401

Subject Name: Telecom Switching System, Networks & Network Management

Date: 18 /12 /2010 **Time: 02.30 pm – 05.00 pm**

Total Marks: 60

Instructions:

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

Q.1 **(a)** Compare centralized data network and distributed data network and explain centralized stored program control in detail. **06**

(b) Explain the N X N three stage switching network. Draw the Lee's graph to discuss its blocking probability. Also draw the three-stage nonblocking configuration. **06**

Q.2 **(a)** i) Compare single-stage and multi-stage networks in brief. **06**

ii) What are the broad categories of the enhanced services? Discuss three-party conferencing connection.

(b) i) Given that MTBF=2500 hours and MTTR= 5 hours, calculate the unavailability and availability for single and dual processor system. **06**

ii) In what way is stored program control superior to hard-wired control?

iii) Draw the logical interconnection block diagram for the different elements of a switching system.

OR

(b) i) Differentiate between Folded and Non-Folded network. In a 100-line folded network, how many switching elements are required for nonblocking operation? **06**

ii) Classify switching system.

iii) What is a fully connected network? How many links are required for fully interconnecting 15 subscribers?

Q.3 **(a)** What is the advantage of combination switching? Explain two-stage TS switch. How to make a TS Switch a non blocking one? In a TS switch, M=128, N=16 and the number of subscribers connected to the system is 0.1MN. Determine the blocking probability of the switch if **06**

i) All subscribers are active at the same time.

ii) Only 50% of the subscribers are active simultaneously.

(b) i) Compare time division space switch and time division time switch. **06**

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.

OR

Q.3 **(a)** Explain TCP/IP-based networks. Compare SNA, OSI, and Internet protocol layer models in brief. **06**

(b) What are the challenges in managing the network? What is a goal of network management? List network management functions. **06**

Q.4 **(a)** Define the followings: **06**

i) Grade of service ii) Blocking Probability

iii) Time consistent busy hour iv) BHCA

v) Centum call second vi) Erlang

(b) i) Explain Lost calls cleared system with infinite sources. **06**

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.

OR

Q.4 **(a)** Explain three-tier organization model and information model in brief. **06**

(b) Explain $SNMP_V2$ network management architecture. What are the significant changes which have been introduced in the architecture of $SNMP_V2$? **06**

Q.5 **(a)** i) What are the two schemes for migration from $SNMP_V1$ to $SNMP_V2$? Explain any one in detail. **06**

ii) List the applications of $SNMP_V3$ and explain any two in brief.

(b) What is Remote Monitoring? Draw ATM network reference model and explain ATM Remote Monitoring in brief. **06**

OR

Q.5 **(a)** i) Explain monitoring of a total network with individual RMON probes. **06**

ii) Explain firewalls for network protection.

(b) What are the two approaches available to implement a Web interface on existing SNMP based management system? Explain any one of them in detail. **06**

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