GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII • EXAMINATION – WINTER • 2014 Subject Code: 181201 Date: 04-12-2014 Subject Name: Telecommunication Transmission and Switching Time: 02:30 pm - 05:00 pm **Total Marks: 70** Instructions: 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. **0.1** (a) Determine the switch advantage ratio of three stage networks with N inlets and N 04 outlets for the cases when(i) N=128 and (ii) 32 (b) Define(i) BHCA and (ii) Busy Hour. 03 (c) A 1000 inlet and 1000 outlet digital switch is to be built using TSI. Determine the 03 size of the control memory. (d) Explain the classification of switching systems. 04 (a) Derive the formula for the availability and unavailability of single and dual processor Q.2 07 systems. **(b)** During a busy hour, 1400 Calls were offered to a group of trunks and 14 calls were 07 lost. The average call duration has 3 minutes. Find(i) Traffic Offered(ii) Traffic Carried (iii) GOS.(iv) Total duration of period of congestion. OR (b) A Three stage switching structure supports 128 inlets and 128 outlets. It is proposed 07 to use 16 first stage and third stage matrices. (i) What is the number of switching elements in the network if it is nonblocking? (ii) At peak periods, the occupancy rate of an inlet is 15%. If the number of switching elements required for nonblocking operation is reduced by a factor of 3, what is the blocking probability of the Network? Briefly describe the design parameters for designing a switching system. Q.3 05 (a) (b) Given that MTBF=2000hrs and MTTR=4 hrs.Calculate the unavailability for single 05 and dual processor system for 10 years and 30 years. What do you mean by store programme control? (c) 04 OR (a) Explain different types of ISDN service categories. Q.3 05 There are 100 subscribers with the following telephone traffic profile. 20 makes 1 05 **(b)** call/hr for 6 minutes,20 makes 3calls/hr for half a minute,60 make 1 call/hr for 1 minute. What is the total traffic and average traffic of each subscriber? Briefly explain 3 stage combination switching. (c) 04 Q.4 Describe time division time switching with neat sketch. 07 (a) Explain Architecture of SS7 in detail. **(b)** 07 OR (a) Describe time multiplexed time switching with neat sketch. **Q.4** 07 Differentiate in channel signaling and common channel signaling with suitable 07 **(b)** example. **Q.5** Describe Birtth-Death processs with the help of state transitions in contest of 07 (a) telephone traffic. (b) Write short note on centralized store program control. 07 OR (a) Explain main elements of the TIA reference model. Q.5 07 Write short note on distributed store program control. 07 **(b)**

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