

**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.

- Q.1**
- (a) Determine the switch advantage ratio of three stage networks with N inlets and N outlets for the cases when (i) N=128 and (ii) 32 **04**
  - (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 size of the control memory. **03**
  - (d) Explain the classification of switching systems. **04**
- Q.2**
- (a) Derive the formula for the availability and unavailability of single and dual processor systems. **07**
  - (b) During a busy hour, 1400 Calls were offered to a group of trunks and 14 calls were lost. The average call duration has 3 minutes. Find (i) Traffic Offered (ii) Traffic Carried (iii) GOS. (iv) Total duration of period of congestion. **07**
- OR**
- (b) A Three stage switching structure supports 128 inlets and 128 outlets. It is proposed 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 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?
- Q.3**
- (a) Briefly describe the design parameters for designing a switching system. **05**
  - (b) Given that MTBF=2000hrs and MTTR=4 hrs. Calculate the unavailability for single and dual processor system for 10 years and 30 years. **05**
  - (c) What do you mean by store programme control? **04**
- OR**
- Q.3**
- (a) Explain different types of ISDN service categories. **05**
  - (b) There are 100 subscribers with the following telephone traffic profile. 20 makes 1 call/hr for 6 minutes, 20 makes 3 calls/hr for half a minute, 60 make 1 call/hr for 1 minute. What is the total traffic and average traffic of each subscriber? **05**
  - (c) Briefly explain 3 stage combination switching. **04**
- Q.4**
- (a) Describe time division time switching with neat sketch. **07**
  - (b) Explain Architecture of SS7 in detail. **07**
- OR**
- Q.4**
- (a) Describe time multiplexed time switching with neat sketch. **07**
  - (b) Differentiate in channel signaling and common channel signaling with suitable example. **07**
- Q.5**
- (a) Describe Birth-Death process with the help of state transitions in context of telephone traffic. **07**
  - (b) Write short note on centralized store program control. **07**
- OR**
- Q.5**
- (a) Explain main elements of the TIA reference model. **07**
  - (b) Write short note on distributed store program control. **07**

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