

GUJARAT TECHNOLOGICAL UNIVERSITY**B. E. - SEMESTER – VII • EXAMINATION – WINTER 2012****Subject code: 173204****Date: 01-01-2013****Subject Name: Telecommunication Engineering****Time: 10.30 am - 01.00 pm****Total Marks: 70****Instructions:**

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

- Q.1** (a) (i) Define Grade of service. **02**
 (ii) Define folded network. **02**
 (iii) Define Sampling theorem. **02**
 (iv) For a 25 entity in a fully connected network, how many links are required? **01**
- (b) What are the broad categories of the enhanced services? **07**
- Q.2** (a) Discuss Single-stage Vs Multi-stage Network. Draw $N \times N$, 3 stage switching network & Give total number of switching elements used in it. **07**
 (b) Compare centralized SPC and distributed SPC. With the help of block diagram explain in detail about typical centralized SPC organization. **07**
- OR**
- (b) A three stage switching network supports 64 inlets and outlets. It is supposed to use 8 first stage and third stage matrices. **07**
 (i) What is the number of switching elements in the network if it is Non-blocking?
 (ii) Determine switch advantage ratio.
- Q.3** (a) Explain time multiplexed time (time slot interchange) switch. **07**
 (b) 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. **07**
- OR**
- Q.3** (a) With help of the schematic, explain input controlled time division space switch. **07**
 (b) Explain in detail time multiplexed space switching with diagram. **07**
- Q.4** (a) With help of a bar graph, explain typical telephone traffic pattern of an urban area on a working day and define different busy hours. **07**
 (b) (i) 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. **04**
 (ii) An exchange serves 2000 subscribers. If the average BHCA is 10,000 and the CCR is 60%, calculate the busy hour calling rate. **03**
- OR**
- Q.4** (a) List charging plan for telecommunication and discuss any two. **07**

- (b) (i) During 2 hours of busy period 2400 calls arrived at an exchange, average holding time per call is 2 minutes. What is traffic load in (1)Erlangs (2) CCS? **04**
- (ii) In a group of 10 Servers, each is occupied for 30 minutes in an Observation interval of two hours. Calculate the Traffic carried by each and by the group. **03**
- Q.5** (a) Discuss the international numbering plan for telephone network. **07**
- (b) Draw and explain the block diagram of a pulse code modulation system for speech communication. **07**
- OR**
- Q.5** (a) Write a short note on Vocodor. **07**
- (b) Classify signalling technique & compare Inchannel Vs Common Channel Signalling. **07**
