IC1533

M.Sc. (INFORMATICS) / III Semester 2015
Paper IT33 – TELECOMMUNICATION NETWORKS AND TECHNOLOGY

Time: 3 hrs. ***Attempt any 5 questions*** **Max Marks: 75**
Question No.1 is compulsory.

(Write your Roll No. on the top immediately on receipt of this question paper)

1. Each part carries 3 marks.
   a. Define a telecommunication system? Share its significance.
   b. Differentiate between narrow-band and broad-band ISDN?
   c. In an English speaking country, a long distance caller hears the voice announcement "Lines in this route are busy. Please try after some time".
   d. Mention the differences between third generation and fourth generation cellular networks?
   e. Explain the working of a Touch Tone Dial telephone?

2.
   a. Give a brief description on the classification of switching systems? (6)
   b. A PABX is designed using an output-controlled digital time division space switch for supporting 128 subscribers. The transmission between the subscribers and the exchange is analog. On an average, twenty five percent of the subscribers are active simultaneously. Determine the switch parameters in terms of
      i. Space matrix
      ii. Operating speed of the space matrix
      iii. Control memory configuration and size
      iv. Clock speed
      v. A-D and D-A converter configuration
      vi. Multiplexer/De-multiplexer sizes (5)
   c. Why is the Strowger switching system referred to as a step-by-step switching system? (4)

3.
   a. Discuss the working of a manned Central Battery exchange? Mention the various dis-advantages associated with such an exchange? (5)

b. Draw and explain the working of a crossbar exchange that is locally non-blocking and externally blocking? (5)

c. Discuss the ISDN addressing mechanism? (5)

4.

a. Take a practical example of an ISDN user network interface configuration. Using it define and discuss the various Functional Groupings and Reference Points? (8)

b. Mention the subscriber related signaling functions that are performed by an operator in a manual exchange? (5)

c. In Strowger exchanges, a call may be blocked even though an appropriate path through the switch exists. Explain how this can happen. (2)

5.

a. What is Blocking Probability? Discuss the merits and de-merits of a network having blocking probability
   i. Greater than zero
   ii. Equal to zero (4)

b. A diagonal cross-point matrix exchange supports 500 users. On an average 1000 calls are put through every day. If the cross-point contacts have a mean life of 10000 breaks and makes, estimate as to how often a cross-point may be replaced in this exchange. (4)

c. Design and explain the working of a time division time switch using the phased and slotted modes of operation. (7)

6.

a. Design a 5000 line exchange, such that the traffic handling capacity is greater than 0.4. Calculate the other design parameters as well. (7)

b. Explain the principles of Common Control? (5)

c. Discuss the homing and alarm circuits applied to hunting operations in Strowger exchanges. (3)