Fifth Semester B.E. Degree Examination, Aug./Sept. 2020
Digital Switching Systems

Time: 3 hrs.   Max. Marks: 100

Note: *Answer FIVE full questions, selecting at least TWO questions from each part.*

PART – A

1 a. With the help of neat diagram, explain the principle of 4-wire circuit. (08 Marks)
   b. Express the following power levels in dBW and dBm:
      (i) 1 mW   (ii) 1 W   (iii) 2 mW   (iv) 100 mW   (06 Marks)
   c. Write a short note on Synchronous Digital Hierarchy (SDH). (06 Marks)

2 a. Explain basic central office linkages. (08 Marks)
   b. Explain the functions of switching systems. (06 Marks)
   c. Discuss basic call processing. (06 Marks)

3 a. Define (i) Congestion   (ii) Busy hour   (iii) Holding time
              (iv) GOS.   (08 Marks)
   b. Derive an expression for GOS of a lost call system having N trunks. (08 Marks)
   c. During the busy hour, 1200 calls were offered to a group of trunks and six calls were lost.
      The average call duration was 3 minutes. Find
      (i) Traffic offered, A   (ii) GOS, the grade of service
      (iii) The traffic lost   (iv) The total duration of percentage of congestion.
                                                                               (04 Marks)

4 a. A grading is required to connect 30 outgoing trunks to switches of availability 10. Design a
      progressive grading. (08 Marks)
   b. Design a 3 stage switching network with 400 incoming lines and 400 outgoing lines and
      calculate the total number of cross points appearing in switching network. (08 Marks)
   c. Compare the features of single stage and multistage networks. (04 Marks)

PART – B

5 a. Explain the frame alignment of PCM signal in digital exchange. (06 Marks)
   b. Explain the principle operation of Space Time – Space (STS) network and Time Space
      Time. (TST) network. (10 Marks)
   c. What are concentrators and expanders? (04 Marks)

6 a. Explain the basic software architecture of a typical DSS with neat figure. (10 Marks)
   b. With the help of feature flow diagram explain call forwarding feature. (10 Marks)

7 a. Explain with a neat diagram, a strategy for improving the software quality. (08 Marks)
   b. Explain the basic call model. (08 Marks)
   c. List the call features. (04 Marks)

8 a. Explain generic switch hardware architecture with a block diagram. (08 Marks)
   b. Explain three level scheme of recovery strategy in digital switch. (08 Marks)
   c. Explain line to line intra 1C-OGT call. (04 Marks)

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