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Fifth Semester B.E. Degree Examination, December 2011

Digital Switching Systems

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Explain the hierarchy of a national public switched telecommunication network, with the help of a neat diagram. (06 Marks)
- b. Explain the operation of four-wire circuit used in the two-way transmission systems and derive the expressions for stability margin 'M'. (08 Marks)
- c. Describe plesiochronous digital hierarchy. (06 Marks)
- 2 a. Differentiate circuit switching and message switching. (06 Marks)
- b. Explain the significance of distribution frames, with the help of a neat diagram. (08 Marks)
- c. With the help of a neat diagram, explain the basic types of calls that are usually processed through a digital switching systems. (06 Marks)
- 3 a. Derive the expression for second Erlangs distribution starting from the basic principles. (08 Marks)
- b. A group of 20 trunks provides a GOS pf 0.01 when offered 12E as traffic :
 - i) How much GOS is improved if one extra is added to the group?
 - ii) How mach does the GOS deteriorate if one trunk is out of service? (06 Marks)
- c. Calculate $E_{2N}(A)$ from $E_{1N}(A)$. (06 Marks)
- 4 a. Design a progressive grading system connecting 30 outgoing trunks and having an availability of only 10 switches. Draw the grading diagram. (08 Marks)
- b. Obtain an expression for minimum number of cross points for a two stage network with incoming trunks greater than outgoing trunks. (06 Marks)
- c. Find the GOS when a total of 30E is affected to the two-stage switching network and the traffic is evenly distributed over the 10 outgoing routes. (06 Marks)

PART – B

- 5 a. With a neat ketch, explain the operation of a K X M space switch. (06 Marks)
- b. Compare S-T-S networks and T-S-T networks. (07 Marks)
- c. Write a note on frame alignment and synchronization networks. (07 Marks)
- 6 a. Explain with the help of a neat diagram, the classification of the digital switching system software. (08 Marks)
- b. With the help of feature flow diagram, explain call forwarding feature. (06 Marks)
- c. Explain the concept of call models in the design of telephony systems. (06 Marks)
- 7 a. Describe the various organizational interfaces of a typical DSS control office. (10 Marks)
- b. Explain with a neat diagram, a strategy for improving software quality. (10 Marks)
- 8 Write short notes on :

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| a. Generic switch hardware architecture | b. Recovery strategy |
| c. Common characteristics of DSS | d. Analysis report for DSS. (20 Marks) |

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.

