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06EC55

Fifth Semester B.E. Degree Examination, June 2012
Digital Switching Systems

Time: 3 hrs. Max. Marks:100

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

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.

PART – A

1 a. Explain briefly with neat diagram, national telecommunication network. **(06 Marks)**
b. With suitable diagram, explain principle of frequency division multiplexing. **(06 Marks)**
c. With neat sketch, explain synchronous digital hierarchy (SDH) with frame structures. **(08 Marks)**

2 a. Bring out salient features of basic functions of switching system. **(06 Marks)**
b. Explain the functions of MDF, IDF and TDF in strowger exchange. **(08 Marks)**
c. Explain neatly, with diagram, the evolution of digital switching system. **(06 Marks)**

3 a. On an average one call arrives every five seconds during a period of 10 seconds, what is the probability that
i) No call arrives; ii) One call arrives; iii) Two calls arrive; iv) More than two calls arrive, where $\mu = 2$. **(08 Marks)**
b. Derive an expression for the second Erlang distribution. **(08 Marks)**
c. Explain the following: i) Pure chance traffic; ii) Congestion. **(04 Marks)**

4 a. Explain briefly the meanings of following terms:
i) Graded groups; ii) Availability;
iii) Skipped grading; iv) Homogeneous grading. **(08 Marks)**
b. With the aid of simple diagram derive expression for progressive grading. **(06 Marks)**
c. Design a two stage switching network for connecting 200 incoming trunks to 200 outgoing trunks. **(06 Marks)**

PART – B

5 a. With neat sketch, explain T-S-T switching network. **(06 Marks)**
b. A T-S-T network has 20 incoming and 20 outgoing PCM highways, each conveying 30 channels, the required grade of service is 0.01, find the traffic capacity of the network if
i) Connection is required to a particular free channel on selected outgoing highway.
ii) Connection is required to the particular outgoing highway but any free channel on it may be used. **(08 Marks)**
c. Explain the frame alignment of PCM signals in digital exchange. **(06 Marks)**

6 a. Explain in brief digital switching system software classification. **(10 Marks)**
b. With neat block diagram, explain software linkages during a call. **(10 Marks)**

7 a. Explain briefly with neat block diagram of organizational interfaces of a typical digital switching systems central office. **(10 Marks)**
b. Explain system outage and its impact on digital switching system reliability. **(04 Marks)**
c. Write a short note on defect analysis. **(06 Marks)**

8 a. Explain A generic switch software architecture. **(10 Marks)**
b. Explain three level scheme of recovery strategy in digital switch. **(06 Marks)**
c. Write common characteristics of digital switching system. **(04 Marks)**

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