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10EC82

Eighth Semester B.E. Degree Examination, Dec.2017/Jan.2018
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. Explain the hierarchy of a national 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 system. **(08 Marks)**
    c. With suitable diagram, explain the principle of frequency multiplexing. **(06 Marks)**

2   a. Differentiate circuit switching and message switching. **(06 Marks)**
    b. Explain the functions of MDF, IDF, and TDF in strowger exchange. **(06 Marks)**
    c. Explain neatly, with diagram, the evolution of digital switching system. **(08 Marks)**

3   a. Define the following :
       i) Busy hour   ii) Grade of service   iii) Holding time   iv) Statistical equilibrium. **(08 Marks)**
    b. Derive an expression for grade of service of a lost call system having N trunks. **(06 Marks)**
    c. A group of 20 trunks provides a GoS of 0.01 when offered 12E traffic.
       i) How much is the GoS improved if one extra trunk is added to the group?
       ii) How much does the GoS deteriorate if one trunk is out of service? **(06 Marks)**

4   a. With the aid of simple diagram, derive expression for a progressive grading system. **(08 Marks)**
    b. Obtain an expression for minimum number of cross points for a two stage network with incoming trunks greater than outgoing trunks. **(08 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. **(04 Marks)**

PART – B

5   a. With neat sketch, explain T-S-T switching network. **(06 Marks)**
    b. An S-T-S network has 16 incoming and 16 outgoing highways each of which conveys 24 PCM channels. Between the incoming and outgoing space switches, there are 20 links containing time switches. During the busy hour, the network is offered 300E. Estimate the grade of service if :
       i) Connection is required to a particular free channel on a selected out going highway.
       ii) Connection is required to a 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 basic software architecture used in digital switching system. **(12 Marks)**
    b. With flow diagram, discuss call forwarding feature. **(08 Marks)**

7   a. Describe the various organizational interfaces of a typical DSS control office. **(10 Marks)**
    b. Explain the problem reporting system with a suitable block diagram and briefly explain how the maintenance cost be reduced in DSS. **(10 Marks)**

8   a. Explain Generic hardware and software architecture with a neat diagram. **(10 Marks)**
    b. Explain : i) Recovery strategy   ii) Analysis reports for DSS. **(10 Marks)**

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