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06EC55

Fifth Semester B.E. Degree Examination, June/July 2011
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 in brief the operation of a four-wire circuit in two-way transmission system. **(08 Marks)**

b. Express the following power levels in dBm and dBW:
i) 1 mW ii) 1 W iii) 2 mW iv) 100 mW. **(04 Marks)**

c. Calculate the total bit rate for a 30-channel PCM system and draw figure for the same with all details included. Also show calculation for length of the frame. **(08 Marks)**

2 a. Bring out the differences between circuit switching and message switching. **(06 Marks)**

b. Mention the functions of a switching system. **(06 Marks)**

c. With neat block diagram, explain subscriber's line interface circuit for a digital exchange. **(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 five trunks is offered 2E of traffic. Find
i) The grade of service
ii) The probability that only one trunk is busy.
iii) The probability that only one trunk is free.
iv) The probability that at least one trunk is free. **(06 Marks)**

4 a. Design a grading for connecting 20 trunks to switches having ten outlets. **(08 Marks)**

b. Derive an expression for minimum number of crosspoints considering two stage network with M incoming trunks and N outgoing trunks. **(12 Marks)**

PART – B

5 a. With neat sketch, explain space switch and time switch. **(12 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 300 E. Estimate the grade of service if
i) Connection is required to a particular free channel on a selected outgoing highway.
ii) Connection is required to a particular outgoing highway but any free channel on it may be used. **(08 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. Explain in brief system outage and its impact on DSS reliability. **(06 Marks)**

b. What is the scheme that a digital switching environment follows for the internal and external reporting of faults? Discuss. **(08 Marks)**

c. Explain in brief a strategy for improving software quality. **(06 Marks)**

8 a. Draw flowchart for a typical call through a typical digital switching system. **(06 Marks)**

b. Explain in brief generic switch hardware architecture. **(06 Marks)**

c. Write short notes on: i) Skipped grading ii) Reliability analysis. **(08 Marks)**

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