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10EC82

Eighth Semester B.E. Degree Examination, June/July 2018

Digital Switching System

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 the different network structures used in communication system. **(08 Marks)**

b. A four-wire circuit has an overall loss [two-wire to two wire) of 1 dB and the balance return loss at each end is 6 dB. Find:
   i) The singing point
   ii) The stability margin
   iii) The attenuation of talker and listener echo. **(04 Marks)**

c. Explain the principle operation of time-division multiplexing transmission system. **(08 Marks)**

2 a. Explain the working of distribution frames in strowger exchange. **(10 Marks)**

b. Draw the block diagram of central office linkage and explain individual blocks. **(10 Marks)**

3 a. Starting from basic principle, derive an expression for the second Erlang's distribution. **(10 Marks)**

b. What is congestion? Discuss briefly. **(06 Marks)**

c. On average, one call arrives every 5 seconds. During a period of 10 seconds what is the probability that (i) No call arrives (ii) One call arrives (iii) Two call arrives (iv) more than two call arrives. **(04 Marks)**

4 a. Design a progressive grading system connecting 20 outgoing trunks and having switches with availability of 10. Draw the grading diagram. **(10 Marks)**

b. Draw and explain two stage switching network and design a two stage switching network for connecting 200 incoming and 200 outgoing trunks. **(10 Marks)**

PART – B

5 a. Draw and discuss space switch diagram with K incoming and m outgoing PCM highways. **(08 Marks)**

b. A T-S-T network has 20 incoming and 20 outgoing PCM highway, each conveys 30 channels. The required grade of service is 0.01, 0.02, 0.001, 0.005. Find the traffic capacity of network in mode 1 and mode 2. **(06 Marks)**

c. Explain the frame alignment of PCM signals entering a digital exchange. **(06 Marks)**

6 a. Draw and explain the basic software architecture of a digital switching system. **(10 Marks)**

b. Explain flow diagram using three modes of operation. **(10 Marks)**

7 a. Draw and explain the block diagram of interfaces of a typical digital switching system central office. **(10 Marks)**

b. Discuss briefly: i) Firm ware-software coupling
   ii) Switching system-maintainability metrics. **(10 Marks)**

8 a. Explain generic switch software architecture. **(10 Marks)**

b. Discuss common characteristics of digital switching systems. **(10 Marks)**

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