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10EC82

Eighth Semester B.E. Degree Examination, Feb./Mar. 2022
Digital Switching Systems

Time: 3 hrs.   Max. Marks:100

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

PART – A

1   a. With a neat diagram, explain the hierarchy used in the national Public Switched Telephone Network (PSTN). **(08 Marks)**
    b. Explain the 3D-channel PCM primary multiplex, with a neat diagram. **(08 Marks)**
    c. A four wire circuit has an overall loss (Two-wire to two-wire) of 1db and the balance return loss at each end is 6db. Find: i) The singing point   ii) The stability margin   iii) The attenuation of talker and listener echo. **(04 Marks)**

2   a. Differentiate between circuit switching and message switching. **(06 Marks)**
    b. With a neat block diagram, explain subcriber's line interface circuit for a digital switch. **(06 Marks)**
    c. Explain the basic functions of a switching systems. **(08 Marks)**

3   a. Define the following terms: i) Traffic intensity   ii) Grade of service   iii) Busy hour   iv) Holding time. **(04 Marks)**
    b. Derive an expression for the second Erlang's distribution starting from basic principles. **(12 Marks)**
    c. On an 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 calls arrive. **(04 Marks)**

4   a. What is Grading? Explain types of grading. **(08 Marks)**
    b. Explain two stage switching network with necessary equations. **(08 Marks)**
    c. Design a three-stage network for 100 incoming trunks and 400 outgoing trunks. **(04 Marks)**

PART – B

5   a. Explain the principle operation of T-S-T network and S-T-S network. With neat diagram. **(12 Marks)**
    b. Explain frame alignment of PCM signals in digital exchange. **(08 Marks)**

6   a. Explain the basic software architecture of a typical digital switching system. **(10 Marks)**
    b. Wire a short notes on a basic call model. **(10 Marks)**

7   a. Write a short notes on the interfaces of a typical digital switching system central office. **(10 Marks)**
    b. Explain the methodology used for reporting and correcting of field problems. **(10 Marks)**

8   a. Write a short note on digital switching system hardware architecture. **(10 Marks)**
    b. Explain the three level scheme of recovery strategy in a digital switch. **(10 Marks)**

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