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10EC82

Eighth Semester B.E. Degree Examination, June/July 2016
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. Draw a neat diagram of four-wire circuit and explain its working. **(10 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. **(06 Marks)**
   c. Write a short note on European pleisochronous digital hierarchy. **(04 Marks)**

2 a. Differentiate between message switching and circuit switching. **(04 Marks)**
   b. Explain the functions of electronic switching. **(06 Marks)**
   c. With the help of neat diagram, explain the basic types of calls that are usually processed through a DSS. **(10 Marks)**

3 a. Derive the expression for second Erlang's distribution starting from basic principles. **(10 Marks)**
   b. Define the following terms:
   i) Busy hour   ii) Grade of service
   iii) Pure chance traffic   iv) Statistical equilibrium **(04 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 calls arrive?   iv) More than two calls arrive? **(06 Marks)**

4 a. What is grading? Explain different types of grading. **(06 Marks)**
   b. Derive the expression for grade of service of three stage network. **(08 Marks)**
   c. Design a three stage network for 100 incoming trunks and 400 outgoing trunks. **(06 Marks)**

PART – B

5 a. Explain S-T-S switching network with neat diagram. **(06 Marks)**
   b. A T-S-T network has 20 incoming and 20 outgoing PCM highway, each conveys 30 channels. The required GOS is 0.01, 0.02, 0.001, 0.005. Find the traffic capacity of network in mode 1 and mode 2. **(08 Marks)**
   c. Explain the need for frame alignment in time division switching network. **(06 Marks)**

6 a. Explain in brief basic software architecture of a typical DSS with neat diagram. **(10 Marks)**
   b. With a neat diagram, explain digital switching system software classification. **(10 Marks)**

7 a. Explain the organizational interfaces of typical DSS central office. **(10 Marks)**
   b. Explain with a neat diagram, a strategy for improving software quality. **(10 Marks)**

8   Write short notes on:
   a. Generic switch software architecture   b. Recovery strategy
   c. Common characteristics of DSS   d. Analysis report for DSS **(20 Marks)**

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