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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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