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Fifth Semester B.E. Degree Examination, Dec.2016/Jan.2017
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 the principle of operation of four-wire circuit with neat diagram. (08 Marks)
- b. Explain 30-channel PCM Primary Multiplex group. (06 Marks)
- c. Explain in brief regulations, standards in telecommunication network. (06 Marks)

- 2 a. Explain the working of distribution frames in strowger exchange. (08 Marks)
- b. Describe the functions of switching system. (06 Marks)
- c. Explain facilities provided by central office with neat diagram. (06 Marks)

- 3 a. Derive second Erlang's distribution formula. (08 Marks)
- b. A group of 20 trunks provides a grade of service of 0.01 when offered 12 E of traffic,
 - (i) How much is the GOS improved if one extra trunk is added to the group? (06 Marks)
 - (ii) How much does the GOS deteriorate if one trunk is out of service? (06 Marks)
- c. Derive the first Erlang distribution formula in lost call system. (06 Marks)

- 4 a. What is grading? Describe various types of grading. (06 Marks)
- b. Design a two stage switching network for connecting 200 incoming trunks to 200 outgoing trunks. (06 Marks)
- c. Derive an expression for grade of service of a three stage network. (08 Marks)

PART – B

- 5 a. Discuss the need for frame alignment in time division switching networks. Explain double ended unilateral and bilateral synchronization systems. (12 Marks)
- b. A T-S-T network has 20 incoming and 20 outgoing PCM highways, each conveying 30 channels. The required grade of service is 0.01. Find the traffic capacity of network if:
 - (i) Connection is required to a particular free channel on a selected outgoing highway (model). (06 Marks)
 - (ii) Connection is required to a particular outgoing highway, but any free channel it may be used (mode 2) (08 Marks)

- 6 a. Explain in brief office data and translation data. (06 Marks)
- b. With a suitable diagram, explain software linkages during a call. (06 Marks)
- c. Explain three modes of operation for call forwarding using flow diagrams. (08 Marks)

- 7 a. Explain the organizational interfaces of a typical DSS central office. (10 Marks)
- b. Explain in brief a strategy for improving software quality. (10 Marks)

- 8 a. Explain in brief generic switch hardware architecture. (06 Marks)
- b. Explain in brief common characteristics of a DSS. (08 Marks)
- c. Explain the three level scheme of recovery strategy in a digital switch. (06 Marks)