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**Eighth Semester B.E. Degree Examination, Dec.2018/Jan.2019**  
**Digital Switching Systems**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. Explain the different network structures used in communication with neat diagram. (06 Marks)
- b. Explain the principle of operation of four wire circuits with the help of a neat diagram. (08 Marks)
- c. Explain principle of frequency division multiplexing with suitable block diagram. (06 Marks)
- 2 a. Explain in brief different functions of a switching system. (06 Marks)
- b. Explain distribution frames in strowger exchange with neat diagram. (08 Marks)
- c. Explain basic central office linkages with suitable diagram. (06 Marks)
- 3 a. Define and explain the following terms:
  - (i) Traffic intensity
  - (ii) Grade of service
  - (iii) Busy hour
  - (iv) Occupancy (06 Marks)
- b. From the basic principles of queuing systems derive the equation for finite queue capacity. (10 Marks)
- c. A group of 20 trunks provides a GOS of 0.01 when offered 12E of traffic.
  - (i) How much GOS is improved if one extra trunk is added to the group?
  - (ii) How much GOS deteriorate if one trunk is out of service? (04 Marks)
- 4 a. What is grading? Explain any two types of gradings. (06 Marks)
- b. Derive an expression for Grade of Service of a 3 stage network. (08 Marks)
- c. Derive a 3 stage network for connecting 100 incoming trunks to 100 outgoing trunks. (06 Marks)

**PART – B**

- 5 a. With a neat sketch explain the operation of a space switch. (08 Marks)
- b. Discuss the need for frame alignment in time division switching networks. (06 Marks)
- c. Explain single ended unilateral and bilateral synchronization system. (06 Marks)
- 6 a. Explain in brief Basic software architecture used in digital switching systems. (14 Marks)
- b. Explain in brief call models and connect sequence. (06 Marks)
- 7 a. Describe the various organizational interfaces of a typical DSS control office. (10 Marks)
- b. Explain with a neat diagram a strategy for improving software analysis. (10 Marks)
- 8 a. Briefly explain generic switch hardware architecture. (07 Marks)
- b. Briefly explain common characteristics of a DSS. (07 Marks)
- c. Explain Recovery strategy of DSS. (06 Marks)

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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.