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**Eighth Semester B.E. Degree Examination, July/August 2022**  
**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 Time division multiplexing with a suitable diagram. (08 Marks)
  - b. Explain in brief regulation and standards in a telecommunication network. (06 Marks)
  - c. With a neat diagram, explain 24-channel PCM frame format. (06 Marks)
- 2
  - a. Describe the functions of switching systems. (06 Marks)
  - b. Explain the working of distribution frame in stronger exchange. (08 Marks)
  - c. With a neat diagram, explain basic central office linkages. (06 Marks)
- 3
  - a. Define the following terms : i) Traffic Intensity ii) Grade of service iii) Busy hour iv) Pure chance traffic v) Full availability vi) Statistical equilibrium. (06 Marks)
  - b. On average one call arrives every 5 seconds, during a period of 10 seconds, what is the probability that i) No call arrive? ii) One call arrives? iii) Two calls arrive? iv) more than two calls arrive? (06 Marks)
  - c. Derive second Erlang's distributions formula. (08 Marks)
- 4
  - a. Design a two stage switching network for connecting 200 incoming trunks to a 200 outgoing trunks. (06 Marks)
  - b. Derive an expression for the total number of cross points for three stage network with 'N' incoming and 'N' outgoing trunks. (08 Marks)
  - c. Give the comparison of single stage and multistage networks. (06 Marks)

**PART – B**

- 5
  - a. Explain Space-Time-Space switch 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 Gas is 0.01, 0.02, 0.001 and 0.005. Find the traffic capacity of network in mode 1 and model 2. (08 Marks)
  - c. With a neat diagram, explain frame synchronization. (06 Marks)
- 6
  - a. Explain in brief basic software architecture used in digital switching systems clearly showing three distinct levels of control. (14 Marks)
  - b. Explain in brief call models and connect sequence. (06 Marks)
- 7
  - a. Explain the interfaces of digital switching central office. (10 Marks)
  - b. Describe the strategy for improving software quality with neat diagram. (10 Marks)
- 8
  - a. Explain in brief generic switch software architecture. (06 Marks)
  - b. Explain the common characteristics of digital switching system. (08 Marks)
  - c. Write short note on Recovery strategy. (06 Marks)

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