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Fifth Semester B.E. Degree Examination, May/June 2010
Digital Switching Systems

Time: 3 hrs.

Max. Marks:100

Note: 1. Answer any FIVE full questions, selecting at least TWO questions from each part.
2. Missing data may be suitably assumed.

PART – A

- 1 a. With a block schematic, explain the national telecommunication network. (10 Marks)
 b. Describe a four wire circuit system used in telecommunication. (10 Marks)
- 2 a. Differentiate between TDM and FDM transmission network, with suitable diagrams. (10 Marks)
 b. Explain a two stage link system of the primary and secondary switches of size 10×10 to interconnect 100 incoming and 100 outgoing trunks. (10 Marks)
- 3 a. Discuss the features of automatic switching system. (10 Marks)
 b. Write the block diagram of subscribers line interface circuit for a digital exchange. (10 Marks)
- 4 a. Derive an expression for a lost call system (GOS of a loss system). (10 Marks)
 b. A group of five trunks is offered 2E of traffic. Find:
 i) The grade of service
 ii) The probability that only one trunk is busy
 iii) The probability that only one trunk is free
 iv) The probability that atleast one trunk is free. (10 Marks)

PART – B

- 5 a. Derive an expression for second Erlang distribution. (10 Marks)
 b. A PBX has three operators on duty and receives 400 calls during the busy hour. Incoming calls enter a queue and are dealt with in order of arrival. The average time taken by an operator to handle a call is 18 seconds. Call arrivals are Poissonian and operator service times have a negative exponential distribution.
 i) What percentage of calls have to wait for an operator to answer them?
 ii) What is the average delay, for all calls and for those which encounter delay?
 iii) What percentage of calls are delayed for more than 30 seconds? (10 Marks)
- 6 a. Explain basic software architecture of a typical digital switching system. (10 Marks)
 b. Discuss the basic call model. How does the software scan the line and detect the request for organizations? (10 Marks)
- 7 a. Discuss digital switch outages as measure of switching system reliability and affect maintainability. (10 Marks)
 b. Explain the effect of firmware deployment on digital switching systems. (10 Marks)
- 8 a. Describe the recovery strategy for hypothetical digital switching system. (10 Marks)
 b. Explain the basic steps necessary to complete a simple call through a digital switching system. (10 Marks)

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.

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