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10EC82

Eighth 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 network services with diagram showing the relationship of service and bearer networks. **(07 Marks)**

b. Explain the principle of operation of four-wire circuit with neat diagram. **(08 Marks)**

c. Explain the principles of time-division multiplexing transmission with elementary TDM system and channel pulse trains. **(05 Marks)**

2 a. What are the different functions of switching system? Explain briefly. **(05 Marks)**

b. Explain the cross bar system with matrix of cross points. **(05 Marks)**

c. With diagram, explain the basic central office linkages, (relevant to MDF, TDF, power plant give explanation). **(05 Marks)**

d. Explain the switching system hierarchy with relevant diagram. **(05 Marks)**

3 a. Explain the congestion in telecommunications traffic system. **(05 Marks)**

b. During the busy hour, 1200 calls were offered to a group of trunks and six calls were lost. The average call duration was 3 minutes. Find:

i) The traffic offered.
ii) The traffic carried.
iii) The traffic lost.
iv) The grade of service.
v) The total duration of the periods of congestion. **(05 Marks)**

c. Explain the lost call system with assumptions, diagram and mathematical expressions. **(10 Marks)**

4 a. Explain the principles of gradings diagrams showing sixteen trunks interconnected to two groups of switches of availability 10. Write the following: i) Full diagram; ii) Grading diagram. **(08 Marks)**

b. Design a three-stage network for connection 100 incoming trunks to 100 outgoing trunks. Assume suitable data. **(06 Marks)**

c. Explain briefly about grades of service of link systems. **(06 Marks)**

PART – B

5 a. With relevant diagram explain the principle of operation of the space switch showing the 'K' incoming PCM highways and the in outgoing PCM highways. **(08 Marks)**

b. Explain the structure of time-space-time (T-S-T) switching network with m is number of PCM highways and 'n' is number of time slots. **(07 Marks)**

c. With diagram, explain the following exchange synchronization systems:

i) Single ended unilateral system.
ii) Double-ended unilateral system. **(05 Marks)**

6 a. With relevant diagram, explain the digital switching system software classification briefly. **(08 Marks)**

b. With neat diagram, explain the operation of the software linkages during a call. **(08 Marks)**

c. Name the different categories of call features. **(04 Marks)**

7 a. With flowchart explain the operation of interfaces of a typical digital switching system central office. **(07 Marks)**

b. With relevant block diagram approach explain the strategy for improving software quality. **(08 Marks)**

c. Write a note on 'Defect Analysis'. **(05 Marks)**

8 a. Explain briefly about generic switch hardware architecture with relevant diagram. **(08 Marks)**

b. Explain about some of the common characteristics of digital switching systems. **(07 Marks)**

c. Write note on 'Analysis Report'. **(05 Marks)**

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