



Eighth Semester B.E. Degree Examination, Jan./Feb. 2021
Digital Switching Systems

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO full questions from each part.

PART – A

- 1 a. Explain the Network Services, with diagram showing the relationship of service and bearer networks. (06 Marks)
- b. Explain the importance of the four wire circuit in Telephone network with relevant diagram. (07 Marks)
- c. Explain the synchronous digital hierarchy system with relevant diagram and SDH frame structure. (07 Marks)
- 2 a. Explain the message switching and circuit switching. Give comparison between them. (06 Marks)
- b. Explain the functions of a switching system. (06 Marks)
- c. Explain the building blocks of digital switching system
 - i) With lines and trunks
 - ii) With the line modules and trunk modules
 - iii) With network control processors. (08 Marks)
- 3 a. Explain congestion relevant to the telecommunication traffic. (06 Marks)
- b. On average, one call arrives every 5 seconds. During a period of 10 seconds, what is the probability that
 - i) Number of calls arrives?
 - ii) One call arrives?
 - iii) Two calls arrives?
 - iv) More than two calls arrive? (08 Marks)
- c. Explain the Queueing System with diagram, in telecommunication traffic. (06 Marks)
- 4 a. Explain the principle of Gradings in switching networks with sixteen trunks interconnected to two groups of switches of availability 10. And also write the full diagram and Grading diagram. (08 Marks)
- b. Design a three-stage network for connecting 100 incoming trunks to 100 outgoing trunks. (06 Marks)
- c. Explain briefly about Grades of service of link systems. (06 Marks)

PART – B

- 5 a. Explain the space and time switching with space-switch diagram and Time-switch diagram briefly. (10 Marks)
- b. Explain the operation of the Time-Space-Time (T-S-T) switching network with m number of PCM highways and n number of time-slots. (05 Marks)
- c. Explain the process of synchronization in Time division switching with diagram showing the frame alignment of PCM signals entering a digital exchange. (05 Marks)



- 6 a. Explain the Digital switching software classification with relevant diagram. (08 Marks)
- b. Explain the following briefly:
 - i) Call Features (05 Marks)
 - ii) Feature Flow Diagrams (05 Marks)
 - iii) Feature Interaction (02 Marks)
- 7 a. Explain the organizational interlaces of a Typical digital switching system central office with relevant diagram. (08 Marks)
- b. With suitable diagram, explain the operation of the 'a strategy for improving software quality'. (07 Marks)
- c. Write a note on Defect Analysis. (05 Marks)
- 8 a. With diagram, explain the operation of the generic switch hardware architecture of hypothetical digital system. And also briefly explain about network control processors, interface controllers and interface modules. (09 Marks)
- b. Explain the possible, and an effective recovery strategy for the hypothetical digital switching system based on a three level scheme. (06 Marks)
- c. Explain the analysis report of a digital switching based on system description parameters and maintenance features of a digital switch (05 Marks)