Fifth Semester B.E. Degree Examination, June/July 2016
Digital Switching Systems
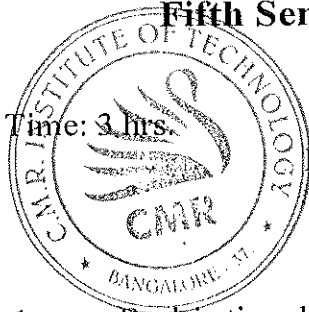
Time: 3 hrs.
Max. Marks:100

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

PART – A

1 a. Explain time division multiplexing with suitable block diagram. (06 Marks)
   b. With a neat diagram, explain hierarchy of national public switched telecommunication network. (06 Marks)
   c. Describe SDH frame structure with diagram. (08 Marks)

2 a. Describe the functions of electronic switching. (06 Marks)
   b. With block diagram, explain subscriber's line interface circuit for a digital exchange. (06 Marks)
   c. What are the facilities provided by central office, explain with diagram. (08 Marks)

3 a. Define the following terms : i) traffic ii) congestion iii) busy hour. (06 Marks)
   b. Derive the expression for second Erlangs distribution starting from basic principles. (08 Marks)
   c. A group of five trunks is offered 2E of traffic. Calculate :
     i) Grade of service ii) probability that only one trunk is busy iii) probability that only one trunk is free iv) probability that at least one trunk is free. (06 Marks)

4 a. What is grading? Explain types of grading. (06 Marks)
   b. Differentiate single stage and multistage networks. (06 Marks)
   c. Design three stage network for 100 incoming trunks and 400 outgoing trunks. (08 Marks)

PART – B

5 a. With neat diagram, explain T–S–T switching network. (06 Marks)
   b. Explain the need for frame alignment in time division switching. (06 Marks)
   c. A T–S–T network has 20 incoming and 20 outgoing PCM highway, each conveys 30 channels. The required GOS is 0.01, 0.02, 0.001, 0.005. Find traffic capacity of network in mode 1 and mode 2. (08 Marks)

6 a. With diagram, explain software linkages during a call. (08 Marks)
   b. Explain digital switch software classification with block diagram. (06 Marks)
   c. Explain the concept of call models in the design of telephone systems. (06 Marks)

7 a. Explain organizational interfaces of central office. (08 Marks)
   b. Draw a typical problem reporting system for digital switching environment. Briefly explain the same. (06 Marks)
   c. Explain with a neat diagram, a strategy for improving software quality. (06 Marks)

8 a. With neat diagram, explain generic switch software architecture. (06 Marks)
   b. Explain common characteristics of digital switching systems. (08 Marks)
   c. List the steps to complete simple call. (06 Marks)