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10EC82

Eighth Semester B.E. Degree Examination, June/July 2015
Digital Switching System

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. With a neat diagram of a four wire circuit connected to two wire circuit through a hybrid transformer and equation for line attenuation, explain singing and two types of echo's. **(10 Marks)**

b. Calculate the total bit rate for a 30 channel PCM system and draw figure for the same with all the details included. Also show calculations for the frame length. **(10 Marks)**

2 a. Differentiate between circuit switching and message switching. **(06 Marks)**

b. With a neat block diagram, explain subscribers line interface circuit for a digital switch. **(07 Marks)**

c. With the help of a neat diagram, explain the intra LM call and inter LM call processing. **(07 Marks)**

3 a. Derive an expression for the second Erlang's distribution starting from basic principles. **(10 Marks)**

b. Calculate $E_{2,N}$ (A) from $E_{1,N}$ (A). **(06 Marks)**

c. A group of 20 trunks provide a GOS of 0.01 when offered 12E traffic.
   i) How much GOS is improved if one extra is added to the group?
   ii) How much does the GOS deteriorate if one trunk is out of service? **(04 Marks)**

4 a. Design a progressive grading system connecting 20 outgoing trunks and having switches with availability of 10. Draw the grading diagram. **(10 Marks)**

b. Design a three-stage network for 100 incoming trunks to 400 outgoing trunks. Draw the diagram. **(10 Marks)**

PART – B

5 a. With a neat diagram, explain the operation of a time switch and discuss its limitations. Also illustrate how a S-T or T-S switch overcome these limitations. **(12 Marks)**

b. Explain synchronization and frame alignment of PCM signals in digital exchange. **(08 Marks)**

6 a. With neat diagram explain level 1, level 2 and level 3 control of a digital switching system. **(10 Marks)**

b. What are feature flow diagram? Draw feature flow diagram for feature activation, feature operation and feature deactivation for a call forwarding feature. **(10 Marks)**

7 a. With a neat block diagram, explain organizational interfaces of a digital switching system central office. **(10 Marks)**

b. Explain system outage and its impact on digital switching system reliability. **(10 Marks)**

8 a. Explain the three level scheme of recovery strategy in a digital switch. **(06 Marks)**

b. Write the common characteristics of digital switching system. **(06 Marks)**

c. Explain with a neat diagram, a generic switch hardware and software architecture. **(08 Marks)**

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