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06EC/TC55

Fifth Semester B.E. Degree Examination, December 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. Any missing data, may be, suitably assumed.
3. Standard notations are used.
4. Draw neat diagrams, wherever necessary.

PART – A

1 a. Define the terms dB, dBw and dBm. **(04 Marks)**

b. An amplifier has an input resistance of 600 Ω and a resistive load of 75 Ω. When it has an r.m.s. input voltage of 100 m.v, the rms output current is 20 mA. Find the gain in dB. **(06 Marks)**

c. Draw a neat diagram of a four wire circuit and explain its working. **(10 Marks)**

2 a. What are the functions of MDF in a telephone exchange? How lime side and exchange side are interconnected? **(06 Marks)**

b. What are the facilities provided to the customer in electronic exchanges which can be controlled by him? **(06 Marks)**

c. With the help of a neat diagram, explain Marker control of cross – bar switch. What is its advantage over step by step control? **(08 Marks)**

3 a. Explain lost call system and delay system as applied to telecommunication switching. Give examples of application of each. **(06 Marks)**

b. During the busy hour, a group of trunks is offered 100 calls having an average duration of 3 minutes. One of the calls fails to find a free trunk. Find :
i) Traffic offered.
ii) Traffic carried.
iii) Grade of service. **(06 Marks)**

c. A full availability group of 10 trunks is offered a total traffic of 4 Erlang. Calculate the traffic carried by each of the first two trunks. **(08 Marks)**

4 a. What is grading? With the aid of a simple diagram, explain progressive grading. **(04 Marks)**

b. Design a grading for connecting 20 trunks to switches having ten outlets. Obtain the best grading scheme. **(06 Marks)**

c. Design a two stage switching network, connecting 200 in coming trunks to 200 outgoing trunks. Draw neat diagrams of possible networks. **(10 Marks)**

PART – B

5 a. Explain the SDH system. **(05 Marks)**

b. Explain T – S – T switch. **(05 Marks)**

c. A T – S – T network has 20 incoming and 20 outgoing PCM highways, each conveying 30 channels. The required grade of service is 0.01. Find the traffic capacity of the network for mode 1 and mode 2. **(10 Marks)**

6 a. Draw a neat diagram of the basic software architecture of a typical digital switching system, showing clearly the three distinct levels of control. What is the type of operating system used in digital switching system? What architectures are used for hardware and software? **(10 Marks)**

b. With a neat block diagram, explain the digital switch software classification. **(10 Marks)**

7 a. With the aid of a neat block schematic, show organizational interfaces of a typical central office (Telephone exchange). What is the function of customer bureau? **(10 Marks)**

b. What are the two categories of digital switch maintainability? **(04 Marks)**

c. Draw a typical problem reporting system for a digital switching environment. Briefly explain the same. **(06 Marks)**

8 Write short notes on the following :

a. Call processing software.

b. Characteristics of digital switching systems.

c. Power plant for central office.

d. Grade of service. **(20 Marks)**

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