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SF-7733

B. E. - IV (ECC) (Sem. - VIII) Examination

May/June – 2011

Telecommunication Switching Systems & Network

(Elective - II)

Time : **3** Hours] [Total Marks : **100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. - 4 (ECC) (SEM. - 8)**

Name of the Subject :

☛ **TELECOMMUNICATION SWITCHING SYSTEMS & NETWORK (ELECTIVE - 2)**

☛ Subject Code No. : **7 7 3 3** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Assume suitable data wherever necessary.

(3) The acronyms carry their usual meaning.

(4) Figures to **right** indicate full marks.

(5) Use of scientific calculator CASIO FX 82/83 FX-100 or equivalent of other companies is allowed.

1 (a) Each of the following questions carry equal marks : **10**

(i) A 1000-line exchange is partly folded and partly nonfolded. Forty per cent of the subscribers are active during peak hour. If the ratio of local to external traffic is 4:1, estimates the number of trunk lines required.

(ii) Calculate the time taken to dial a 12-digit number in DTMF telephone when

(a) The Exchange is capable of receiving DTMF signals.

(b) Compare it result with rotary dialing.

(iii) Calculate the time required to dial the number 00-91-44-414630 using a rotary dial telephone. Assume that the subscriber takes 600mS on an average to rotate the dial for a single digit.

(iv) In a 100 line folded network, how many switching elements are required for nonblocking operation ?

(v) A long distance dialer hears four different types of call-in-progress signal while establishing a call, What can he conclude ? What does busy tone implies ?

(b) Explain Reed relay system with neat diagram. **5**

(c) A Central battery exchange is powered with a 48V battery. The carbon microphone requires a minimum of 24mA as energizing current. The battery has a $400\,\Omega$ resistance in series for short circuit protection. The d.c. resistance of the microphone is $50\,\Omega$. If the cable used for subscriber lines offers a resistance $50\,\Omega$/Km, Determine the maximum distance at which a subscriber station can be located. **5**

2 (a) Explain 100-line exchange with selector finder. **8**

(b) Describe how a uniselector can be used as a selector hunter or line finder. **7**

OR

(a) For a Three stage blocking network derive the expression for blocking probability P_B. Write all the underlying assumption clearly. **8**

(b) Explain 100-line exchange with two-motion line finder. **7**

3 Attempt any **three** : **15**

(i) List the major O and M functions which level 1 processing has to handle.

(ii) Explain briefly about various national and international standards organizations. Which department of India deals with Telecommunications ?

(iii) Explain Crossbar Exchange organization.

(iv) Explain the pulse dialing system and tone dialing system and state merit and demerit for both the system.

(v) Discuss the design parameter for a switching system.

4 (a) Each of the following questions carry equal marks :

(i) Draw the typical telephone traffic on a working day. **2**

(ii) A rural telephone exchange normally experiences four call originations per minute. What is the probability that exactly eight calls occur in an arbitrarily chosen interval of 30sec ? **2**

(iii) Can we use output-controlled time division space switch for broadcasting ? Justify your answer with proper reason. **2**

(iv) Define : **2**
Time consistent busy hour
CCR

(v) Write down the equation of SC (Switching Capacity) for output-controlled time division switch. What should be the ideal value of SC ? Explain the constraint that limits the SC. **2**

(b) With reference to TSI switch. Explain following configuration in detail with neat sketch. **10**

(i) Parallel-in/serial out configuration

(ii) Serial-in/Parallel-out configuration.

5 (a) Explain basic time division time switch. Also explain slotted operation. **7**

(b) Explain lost cleared system with finite subscriber. **8**

OR

5 (a) Explain Time multiplexed space switch. Also explain the same with N CM modules. Show that the switches do not provided full availability. **9**

(b) Explain Classification of signaling techniques. **6**

6 Write short notes on : (any **three**) **15**

(a) GOS and blocking probability

(b) BD process

(c) Numbering plan

(d) Echo suppressor
