ENGINEERING & MANAGEMENT EXAMINATIONS, DECEMBER – 2007
TELECOMMUNICATION SYSTEMS
SEMESTER – 5

Time : 3 Hours]   [Full Marks : 70

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :   10 × 1 = 10

   i)   The supply voltage used in telephone exchange is

   a)   24 V   b)   48 V

   c)   12 V   d)   5 V.

   ii)   Modem used for

   a)   multiplexing

   b)   modulation & demodulation

   c)   remove noise in channel

   d)   none of these.

   iii) In 24 channel PCM signaling, each channel carries

   a)   2 signalling bits   b)   1 signalling bit

   c)   4 signalling bits   d)   none of these.

   iv)   A fully connected network has five nodes so physical link required

   a)   20   b)   10

   c)   5   d)   15.

v)   ISDN means

    a)   Integrated Services Digital Network

    b)   International System Digital Network

    c)   Indian Supply Direct Network

    d)   None of these.

vi)   When the control sub-system is outside the switching network, then the system is called

    a)   Direct Control   b)   Common Control

    c)   Stored Program Control   d)   None of these.

vii) Peak busy hour depends on the consideration of

    a)   one day   b)   over a number of days

    c)   over a month   d)   over a year.

viii) CHILL is a

    a)   CCITT Language   b)   IEEE Language

    c)   IEE Language   d)   ANSI Language.

ix)   In a Strowger system, a high value of CCI indicates

    a)   good design

    b)   poor design

    c)   no impact on design

    d)   EUF data need to be checked.

x)   Loudspeaker is an end instrument of

    a)   transmitter side   b)   receiver side

    c)   both (a) & (b)   d)   none of these.

xi) In DTMF tone the frequency used are

    a) 697/1209 Hz   b) 920/1478 Hz

    c) 220/540 Hz   d) 50/120 Hz.

xii) GOS in India is

    a) 0.02   b) 0.002

    c) 0.2   d) 0.32.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following.   3 × 5 = 15

2. How is call connection established in a step-by-step switching system ? Explain with block diagram.   3 + 2 = 5

3. What do you mean by electronic space division switching. Give MTBF = 2000 hr and MTTR = 4 hrs, calculate unavailability of single and dual processor sysem.   2 + 3 = 5

4. In a large city where there are many exchanges, what factors influence call routing ? How can these problems be solved ?   2 + 3 = 5

5. Explain level 1 & 2 functions of a SS7 signalling system.   5

6. Derive the Erlang's B formula.   5

GROUP – C

(Long Answer Type Questions)

Answer any *three* questions.   3 × 15 = 45

7. a) How are the signalling techniques classified ?

    b) Draw the block diagram of a voice frequency receiver of inband signalling and explain its principle.

    c) What are the disadvantages of a signalling ?

    d) What is non-associated CCS signalling ?

    e) What are the advantages of common channel signalling over inchannel signalling ?   2 + 5 + 3 + 3 + 2 = 15

8. Explain the difference between circuit switching and packet switching. Explain channel associated and channel non-associated common channel signalling. 8 + 7 = 15

9. a) What are GOS and Blocking probability ?

b) During 1200 calls offered to a group of trunks 12 calls were lost. The average call duration was 3 minutes. Find the traffic offered and traffic carried in Erlang. Also find out the value of GOS and the total duration of period of congestion.

c) Explain the working principle of a data communication link.   4 + 6 + 5 = 15

10. a) Over 20 min intervals, 40 subscriber initiate calls. Total duration of the calls is 4800 secs. Calculate the load offered to the N/W by the subscriber and the average subscriber traffic.

b) Write down the differences of Grade of service and Blocking probability.

c) Show that, GOS = PB; where PB is blocking probability.   4 + 4 + 7 = 15

11. Explain the operation of two motion selector. Explain the configuration and working of Strowger switching system.   5 + 10 = 15

END