Name : ……………………………………………………

Roll No. : ……………………………………………………

Invigilator's Signature : …………………………………..

CS/B.TECH/ECE-(O)/SEM-5/EC-501/2012-13
2012
TELECOMMUNICATION SYSTEMS

Time Allotted : 3 Hours   Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words
as far as practicable.

GROUP – A
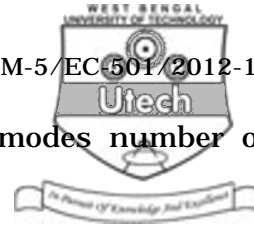### (Multiple Choice Type Questions)

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

$$10 \times 1 = 10$$

   i)   A fully connected network has five nodes. So physical link required is

   a)   20   b)   10

   c)   5   d)   15.

   ii)   ISDN means

   a)   Integrated Service Digital Network

   b)   International System Digial Network

   c)   Indian Supply Direct Network

   d)   None of these.

5105 (O)   [Turn over

iii) 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.

iv) GOS in India is

    a) 0·02   b) 0·002

    c) 0·2   d) 0·32.

v) The ratio of the number of successful calls to the total No. of calls attempt is called

    a) Busy Hour Call Attempt

    b) Call Completion Ratio

    c) Busy Hour Calling Rate

    d) Traffic Load.

vi) Network termination interface between a customer premises and ISDN network is

    a) NT1   b) NT2

    c) TE1   d) TE2.

vii) Which of the following is correct ?

    a) 1E = 60 CCS   b) 1E = 36 CCS

    c) 1E = 3600 CCS   d) None of these.

viii) ISDN B-Channel carries data and services at

    a) 16 kbps   b) 32 kbps

    c) 64 kbps   d) 1·544 kbps.

ix) In fully connected network with N modes number of link required is

a) $n (n - 1) / 2$ b) $n (n + 1) / 2$

c) $n / 2$ d) $n^2 / 2$.

x) In a pulse dialing, the inter-digit gap may be

a) 1 sec   b) 10 sec

c) 200 msec   d) 100 msec.

xi) The unit of traffic intensity is

a) ampere   b) ohm

c) erlang   d) metre.

xii) In DTMF tone, the freq. used is

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

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

GROUP – B

(Short Answer Type Questions)

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

2. a) What do you mean by point to point communication ? Mention the disadvantage of the scheme.

    b) What is Facsimile Transmission ?   2 + 1 + 2

3. Explain the principle of DTMF dialing.

4. What is BORSCHT function ? Why is this important in electronic exchanges ?   2 + 3

5. What do you mean by electronic space division switching ? Given MTBF = 2000 hr and MTTR = 4 hr, calculate unavailability of single & dual processor systems.

6. Explain subscriber local loop architecture.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following.   3 × 15 = 45

7. 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 out the traffic offered and traffic carried in Erlang. Also find out the value of GOS and the total duration of period of congestion.

    c)   An exchange serves 2000 subscribers. If the average BHCA is 10,000 and the CCR is 60%, calculate the busy hour calling rate.   4 + 8 + 3

8. a)   What are the basic approaches to the design of subscriber access to strowger system ? Describe them.

    b)   Describe the operation of Time Division Time Switching.   8 + 7

9. a)   Describe the centralized SPC organized system.

    b)   Explain the architecture of 5ESS system.

    c)   Explain the difference between circuit and packet switching.   7 + 3 + 5

10. a)   Describe the functional grouping and reference points of ISDN.

    b)   How many transmission channels are exists in ISDN ? Explain these.

    c)   Write down the differences between in channel and common channel signaling.   7 + 3 + 5

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