

Name :

Roll No. :

Invigilator's Signature :

CS/B.TECH/ECE/NEW/SEM-6/EC-603/2013

2013

TELECOMMUNICATION SYSTEM

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 × 1 = 10

- i) Attenuation can be reduced in subscriber loop using
 - a) higher diameter in copper wire
 - b) series of inductance in line
 - c) lower diameter in copper wire
 - d) series of a capacitance in line.
- ii) Switching capacity of a 6 × 6 cross-bar switching system is

a) 6	b) 3
c) 12	d) 36.

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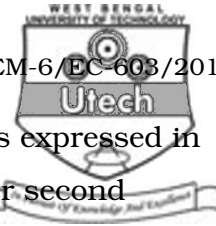
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- iii) Blocking probability is
- a) time congestion
 - b) call congestion
 - c) both (a) and (b)
 - d) none of these.
- iv) When the control subsystem is outside the switching network, then the system is called
- a) direct control
 - b) common control
 - c) stored program control
 - d) none of these.
- v) Circuit switching takes place at the layer of
- a) data line
 - b) physical
 - c) network
 - d) transport.
- vi) In a pulse dialing, the inter digit gap may be
- a) 1 sec
 - b) 10 sec
 - c) 200 m sec
 - d) 100 m sec.
- vii) If PCM binary samples are switched, switching is known as
- a) analog time division switching
 - b) digital time division switching
 - c) time division switching
 - d) none of these.
- viii) High bandwidth for short duration is needed for
- a) data traffic
 - b) voice traffic
 - c) both (a) and (b)
 - d) neither (a) nor (b).

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- ix) Bandwidth of digital transmission media is expressed in
- a) Hz b) Bits per second
c) Decibel d) Erlang.
- x) Which traffic is not at all fault tolerant ?
- a) Data traffic b) Voice traffic
c) Both (a) and (b) d) None of these.
- xi) Unit of traffic intensity is
- a) Ampere b) Ohm
c) mho d) Erlang.
- xii) A telephone set requires bias current of
- a) 1 – 2 mA b) 4 – 6 mA
c) 20 – 30 mA d) 50 – 100 mA.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Explain difference between circuit switching and packet switching technologies.
3. Derive Erlang B formula.
4. Describe merits and demerits of fibre optic cables *vs* copper and co-axial cables for telecommunication transmission media.
5. Describe strowger switching system.
6. Describe facsimile transmission and its technical details.
7. Discuss about different switching networks. What is transit exchange ? What are the advantages of automatic switching system over manual switching system.

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**GROUP – C****(Long Answer Type Questions)**Answer any *three* of the following. $3 \times 15 = 45$

8. a) What is SS7 signaling system ? Explain its protocol. 6
- b) Explain hybrid circuit for digital exchange. 5
- c) Describe switching hierarchy and routing. 4
9. a) What is ISDN ? Explain transmission channel in ISDN. 5
- b) What are drawbacks of ISDN ? How does B-ISDN overcome them ? 5
- c) Explain functional grouping and reference point in ISDN. 5
10. a) Distinguish between time switch and space switch. 2
- b) Explain time division space switch. 5
- c) Describe the operation of time division time switching and calculate the switching capacity of it. 8
11. Define voice over IP. What is session initiation protocol ? Describe SIP message with example. How does telephone communications operate using H.323 standard protocol ?
 $2 + 1 + 6 + 6$
12. Write short notes on any *three* of the following : 3×5
 - i) RS232C
 - ii) Digital PABX
 - iii) Data Terminal Equipment (DTE)
 - iv) ADSL
 - v) Wireless in local loop.