

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 :

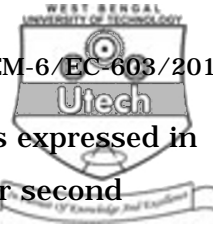
10 × 1 = 10

- 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.



- 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).



- 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. $2 + 1 + 2$



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.
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