



**ENGINEERING & MANAGEMENT EXAMINATIONS, DECEMBER - 2008**  
**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 x 1 = 10

i) ISDN B-Channel carries data and services at

- a) 16 Kbps
- b) 32 Kbps
- c) 64 Kbps
- d) 1.544 Mbps.

ii) In DTMF tone, the frequency used is

- a) 697 Hz/1209 Hz
- b) 920 Hz/1478 Hz
- c) 220 Hz/540 Hz
- d) 50 Hz/120 Hz.

iii) A telephone set requires a bias current of

- a) 1 - 2 mA
- b) 4 - 6 mA
- c) 22 - 30 mA
- d) 50 - 100 mA.

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

- a) good design
- b) poor design
- c) no impact no design
- d) EUF data need to be checked.

v) The standard value of GOS in India is

- a) 0.2
- b) 0.002
- c) 0.02
- d) 0.0002.

**55204 (8/12)**



- vi) 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 rate
- c) busy hour calling rate                      d) traffic load.
- vii) Which of the following is correct ?
- a) IE = 60 CCS                                      b) IE = 36 CCS
- c) IE = 3600 CCS                                  d) None of these.
- viii) Loudspeaker is an end instrument of
- a) transmitter side                                b) receiver side
- c) both (a) & (b)                                  d) none of these.
- ix) A fully connected network has five nodes so physical link required
- a) 20    b) 10
- c) 5    d) 15.
- x) Compared to single processor based, dual processor based SPC exchange offers
- a) Higher unavailability
- b) Higher availability
- c) Higher reliability
- d) Higher reliability & availability.
- xi) In a diagonal cross-point matrix switching system, if the number of cross-point switches 136, then the number of subscriber is
- a) 27    b) 14
- c) 17    d) 30.
- xii) Network termination interface between a customer premises and ISDN network is called
- a) NT1    b) NT2
- c) TE1    d) TE2.



**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) Write down the differences between in channel and common channel signalling.

2 + 1 + 2

3. Define the following terms :

- a) Cost capacity index
- b) Equipment utilization factor
- c) Traffic handling capacity.

2+1 $\frac{1}{2}$ +1 $\frac{1}{2}$

4. a) What are the salient features of RS 232 C standard used in computer communication ?

3

b) Why are MODEMs used in communication ?

2

5. What is BORSCHT function ? Why is this important in electronic exchanges ?

2 + 3

6. How many types of transmission media are used in telecommunication ? What are the advantages of twisted pair cable over parallel wire cable ? What is step index fibre and graded index fibre ?

2 + 1 + 2

**GROUP - C**

**( Long Answer Type Questions )**

Answer any three of the following questions.

3 × 15 = 45

7. What is the difference between time switch and space switch. Describe time division time switching and calculate the switching capacity of the systems.

3 + 12

8. a) Describe the centralised SPC organization system.

b) Draw the architecture of 5ESS system.



c) Consider a subscriber loop of 12 km long, the loop resistance 1607 ohm. Calculate d.c. loop resistance and determine the cable gauge for the loop ?

d) Describe how an uniselector rotary switch can be used as selector hunter ?

6 + 2 + 3 + 4

9. a) Calculate the unavailability of single and dual processor systems in stored program control systems.

b) In SPC systems MTBF = 4000 Hr and MTTR = 4 Hr. Calculate the unavailability for single and dual processor systems for 30 years.

c) Why active processor upgrades the secondary memory after certain time period in standby mode of SPC system.

8 + 3 + 4

10. a) A circuit switching communication network involves 5 switching nodes. Each node takes 2 seconds and 0.2 seconds for establishing and releasing connection respectively. If the data transfer rate is 2400 bps, compute the data transfer time for a message that is 300 bytes long. Derive the formula used.

5

b) Explain the Hybrid circuit for Digital exchanges.

5

c) Explain what do you understand by the term 'Redundancy' as applied to Electronic exchanges. Explain the concept with 'Synchronous Duplex Operation'.

5

11. Write short notes on any two of the following :

$7\frac{1}{2} + 7\frac{1}{2}$

a) Data Terminal Equipment ( DTE )

b) Three-stage combination switch

c) Switching hierarchy and routing

d) Common control switching system.

END