

B.E. (Electronics Telecommunication / Electronics Communication Engineering)  
Sixth Semester (C.B.S.)

**Telecommunication Switching Systems**

P. Pages : 2

Time : Three Hours



**NRJ/KW/17/4523**

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
  2. Solve Question 1 OR Questions No. 2.
  3. Solve Question 3 OR Questions No. 4.
  4. Solve Question 5 OR Questions No. 6.
  5. Solve Question 7 OR Questions No. 8.
  6. Solve Question 9 OR Questions No. 10.
  7. Solve Question 11 OR Questions No. 12.
  8. Due credit will be given to neatness and adequate dimensions.
  9. Assume suitable data whenever necessary.
  10. Illustrate your answers whenever necessary with the help of neat sketches.
  11. Use of non programmable calculator is permitted.

- |    |    |                                                               |   |
|----|----|---------------------------------------------------------------|---|
| 1. | a) | Describe the different tones used in automatic exchange.      | 3 |
|    | b) | Draw & explain the trunking diagram of 1000 line exchange.    | 7 |
|    | c) | Differentiate between local battery & central battery system. | 4 |

**OR**

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|----|------|------------------------------------------------------------------------------------|---|
| 2. | a)   | Draw & explain uniselector & two motion selector switch used in strowger exchange. | 7 |
|    | b)   | Draw & explain Crossbar Switching system in details.                               | 7 |
| 3. | a)   | Derive the Erlang's second distribution formula for the Queueing systems.          | 8 |
|    | b)   | Explain the following terms related with the traffic Engineering.                  | 5 |
|    | i)   | Busy hour                                                                          |   |
|    | ii)  | Busy hour call attempts (BHCA)                                                     |   |
|    | iii) | Busy hour calling rate                                                             |   |
|    | iv)  | Holding time                                                                       |   |

**OR**

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|----|-----|----------------------------------------------------------------------------------------|---|
| 4. | a)  | Explain Mathematical model of traffic.                                                 | 6 |
|    | b)  | A group of 20 trunks provides a grade of service of 0.01 when offered. 12E of traffic. | 7 |
|    | i)  | How much is the grade of service improved if one extra trunk is added to the group?    |   |
|    | ii) | How much does the grade of service deteriorate if one trunk is out of service?         |   |

5. a) Explain various call processing functions. 7
- b) Explain various signal exchanges for making local calls. 6

**OR**

6. a) Explain principle of grading with the help of suitable diagram. 7
- b) Explain single stage Network in details. 6
7. a) Write short notes on **any two**: 6
- i) Jitter ii) Elastic stores
- iii) Clock instability
- b) Explain Network synchronization in detail. 7

**OR**

8. a) Write short notes on "Network Control". 6
- b) Explain Asynchronous Multiplexing. 7
9. a) Explain satellite communication in details. 6
- b) Draw & explain the ISDN Architecture. 8

**OR**

10. a) Explain the OSI model with neat layered diagram. 8
- b) What is PSTN? How data can be communicated with the help of PSTN. 6
11. a) Explain about Roaming & handoff's in detail. 7
- b) If a total 33MHz of bandwidth is allocated to a particular FDD cellular telephone system which uses two 25KHz simplex channels to provide full duplex voice & control channels. Compute the number of channels available per cell if a system uses. 6
- i) Four cell-reuse
- ii) Seven cell-reuse
- iii) 12-Cell-reuse

**OR**

12. a) Explain in details about cellular telephone system. 7
- b) Explain in detail about frequency Reuse concept. 6

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