



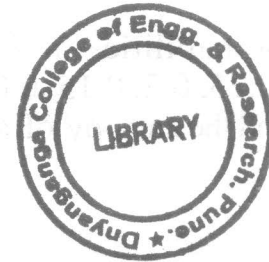
T.E. (Computer) (Semester – I) Examination, 2011
DATA COMMUNICATIONS
(2008 Pattern) (New)

Time : 3 Hours

Max. Marks : 100

- Instructions :** i) Answers to the *two* Sections should be written in *separate* books.
 ii) Neat diagrams must be drawn *whenever* necessary.
 iii) Figures to the **right** indicate **full** marks.
 iv) Assume suitable data if necessary.

SECTION – 1



- | | |
|---|---|
| 1. a) Explain in detail digital communication system. | 8 |
| b) Explain difference in Bit rate and baud rate. | 4 |
| c) Write short note on modem. | 6 |

OR

- | | |
|--|---|
| 2. a) Explain the standard modulation techniques (ASK, FSK PSK). | 8 |
| b) Explain in detail synchronous and asynchronous communication. | 6 |
| c) Compare Analog and digital modulation. | 4 |
| 3. a) Explain in detail what is delta modulation. Draw diagram for delta modulator and demodulator. What are its advantages over PCM ? | 8 |
| b) Explain with diagram operation of DPCM transmitter. | 8 |

OR

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|---|---|
| 4. a) Explain sampling theorem. | 8 |
| b) Explain crosstalk pulse digital modulation techniques. | 8 |
| 5. a) Calculate maximum bit rate of channel having. | 8 |
| i) S/N ratio is 0 dB and bandwidth 1200 Hz | |
| ii) S/N ratio is 20 dB and bandwidth 1200 Hz | |
| iii) S/N ratio is 20 dB and bandwidth is 2400 Hz | |
| iv) S/N ratio is 0 dB and bandwidth is 2400 Hz | |

P.T.O.



- b) Write all code words of (5, 1) linear block code if generator matrix is given as $G = [1\ 1\ 1\ 1\ 1]$ If received code word is 1 0 1 1 0, what will be the transmitted code ?

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OR

6. a) Consider a data stream that is to be transmitted on a voice grade telephone channel with a bandwidth of 3 KHz. Find the channel capacity if the signal to noise ratio is of 10 db. If 100 Kbps data stream is to be transmitted on the channel is it possible to have error free transmission. Justify your answer. If not suggest system modification.
- b) The probabilities of five symbols of a discrete memory less source are 0.35, 0.25, 0.2, 0.15, 0.05. Encode them using Huffman encoding algorithm and find the entropy of above source.

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SECTION – 2

7. Write short notes on **any three** :

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- i) SONET frame structure
- ii) Cellular telephony
- iii) Blue tooth
- iv) Video on demand
- v) PSTN.

OR

8. a) Explain in detail seven layer ISO-OSI reference model for computer network.
- b) Explain the following with respect to ATM.
- i) Constant Bit Rate
 - ii) Variable Bit Rate
 - iii) Available Bit Rate
 - iv) Unspecified Bit Rate.
9. a) Explain different switching techniques.
- b) Describe the network components (Connectors, Hubs, Switches, Repeaters, and Bridges)
- c) Describe different network topologies (Star, Mesh, Ring, and Bus).

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OR

