

May - June - 2011

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T.E. (Computer) (Semester - I) Examination, 2011
(2008 Pattern)

DATA COMMUNICATIONS (New)

Time : 3 Hours

Max. Marks : 100

Instructions : 1) Answer 3 questions from Section I and 3 questions from Section II.

2) Neat diagrams must be drawn wherever necessary.

3) Assume suitable data, if necessary.

SECTION - I

1. a) Explain the functional block diagram of Modem. 8
b) Explain the implementation of QPSK. 8

OR

1. a) Write the comparison between FM and AM systems. 8
b) Show and analyse the constellation diagram for an ASK, BPSK and QPSK. 8

2. a) Encode the following binary data stream into RZ, NRZ, AMI and Manchester codes
1 1 0 0 1 0 1 0 8

- b) Describe effect of Gaussian noise on digital communication. 8

OR

2. a) A TV signal with a bandwidth of 4.2 MHz is transmitted using binary PCM. The number of quantization levels is 1024. Calculate its code word length, transmission bandwidth, final bit rate and output signal to quantization noise ratio. 8

- b) Explain with diagram operation of DPCM transmitter. 8

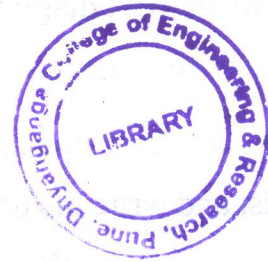
3. a) Explain Stop and Wait ARQ system. 6

- b) Write short notes on CRC. 6

- c) Explain the Huffman encoding algorithm. 6

OR

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3. a) How to improve the throughput efficiency of ARQ system ? 6
b) State and explain Shannon's theorem on channel capacity. 6
c) Explain the error detection and correction capabilities of hamming code. 6

SECTION – II

4. a) List and explain DSL technologies. 8
b) Write short notes on "Cellular telephony" 8

OR

4. a) Explain with diagram SONET frame structure. 8
b) Describe the need of frame relay. 8
5. a) Explain fiber optics modes of propagation. 8
b) List and write the use of different network connecting devices. 8

OR

5. a) What is switch ? Explain difference between manageable and nonmanageable switch. 8
b) Explain the switching techniques used in computer data communication. 8
6. a) Explain various methods of framing in data link layer. 8
b) Why internet needs point-to-point protocol (PPP) ? Write features provided by PPP. Describe frame format of PPP. 10

OR

6. a) Explain bit-map and binary countdown protocol. 8
b) Explain in brief pure ALOHA, slotted ALOHA and CSMA/CD mentioning the efficiency of each. 10