

Total No. of Questions : 12]

SEAT No. :

P2343

[4758]-80

[Total No. of Pages : 3

**T.E. (Computer Engineering)
DATA COMMUNICATIONS
(2008 Course) (Semester-I) (310242)**

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) *Answers to the two sections should be written in separate books.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Assume suitable data if necessary.*

SECTION-I

- Q1)** a) Explain Modem and differentiate between Analog and digital Modulation. **[8]**
- b) Explain in detail digital Communication System. **[6]**
- c) Explain the different frequency components present in 1 kHz sine and 1 kHz square waveform. **[4]**

OR

- Q2)** a) Explain the operation of phase locked loop circuit. Why it has an important significance in Analog Modulation. **[8]**
- b) Explain statistical TDM with diagram. What are issues in TDM? **[6]**
- c) Explain difference in Bit rate and baud rate. **[4]**

- Q3)** a) Explain following terms related to codes (Any Four): **[8]**
- i) Code word.
 - ii) Code rate.
 - iii) Hamming weight of code word.
 - iv) Code efficiency.
 - v) Hamming distance.

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- b) Explain cyclic redundancy check code. [4]
- c) Explain why error detection & correction required. [4]

OR

- Q4)** a) Explain Frequency Division Multiplexing (FDM) and Time Division Multiplexing (TDM) along with their suitable applications. [8]
- b) Explain in short what is Crosstalk and Guard Time. [4]
 - c) Using Shannon's theorem compute the maximum bit rate for a channel having Bandwidth 3100 Hz and signal to noise ratio 20 dB. [4]

- Q5)** a) What is the significance of quantization in A/D Conversion? What is uniform Quantization? What is the drawback associated with it & how to overcome this drawback. [10]
- 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 & find the entropy of above source. [6]

OR

- Q6)** a) Explain persistent & non persistent CSMA. [4]
- b) Write short notes on stop-and-wait protocol. [6]
 - c) Describe limited contention protocol in details. [6]

SECTION-II

- Q7)** Write short note on (Any Three): [18]
- i) PSTN.
 - ii) Frame Relay.
 - iii) Virtual LAN.
 - iv) SONET.

OR

- Q8)** a) Explain differences between ISO-OSI reference model and TCP/IP model. [6]

- b) Explain classification of DSL technologies. [6]
- c) Explain advantages and disadvantages of Bluetooth network. [6]

- Q9)** a) Compare circuit switching, packet switching and message switching. [8]
- b) Define digital hierarchy used by telephone companies. List and explain different levels of hierarchies. [8]

OR

- Q10)**a) Explain functions of [8]
- i) Bridge
 - ii) Switch
 - iii) Repeaters
 - iv) NICs.
- b) Explain guided and unguided transmission media. [8]

- Q11)**a) Explain difficulties in static and dynamic channel allocation. [8]
- b) What is framing? Explain error control & flow control. [8]

OR

- Q12)**a) Explain how sliding window protocol is used for flow control. [8]
- b) Write a note on: [8]
 - i) ALOHA.
 - ii) Virtual LAN.

