

Total No. of Questions : 12]

SEAT No. :

P1415

[Total No. of Pages : 3

[4858] - 182

**T.E. (Computer Engineering)**

**DATA COMMUNICATIONS**

**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates :-*

- 1) *In Section I, attempt Q. No. 1 or Q. No. 2, Q. No. 3 or Q. No. 4, Q. No. 5 or Q. No. 6.*
- 2) *In Section II, attempt Q. No. 7 or Q. No. 8, Q. No. 9 or Q. No. 10, Q. No. 11 or Q. No. 12.*
- 3) *Answers to the two Sections must be written in separate answer books.*
- 4) *Neat diagram must be drawn whenever necessary.*
- 5) *Figures to the right indicate full marks.*
- 6) *Assume suitable data, if necessary.*

**SECTION - I**

- Q1)** 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

- Q2)** a) Explain SNR, channel bandwidth and rate of Communication The power of a signal is 10mW and the power of noise is 1mW. What are the values of SNR, SNRdB? [8]  
b) Explain the different frequency Components present in 1kHz sine and 1kHz Square waveform? [4]  
c) Explain simplified Communication System and mention various parts of Communication System [6]

**P.T.O.**

- Q3)** 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

- Q4)** a) Explain Pulse code modulation technique. [8]  
b) Represent Binary 01001110 in NRZ-L, NRZ-I, RZ, manchester and differential Manchester, AMI. [8]

- Q5)** a) What is the significance of Quantization in A/D Conversion. What is Uniform Quantization? What is the drawback associated with it and how to overcome this drawback. [10]  
b) A Signal  $m(t)$  of Band width  $B = 4$  kHz is transmitted using a binary Companded PCM with  $\mu = 100$ . Compare the case of  $L = 64$  with the case of  $L = 256$  from the point of view of transmission bandwidth and the Output SNR. [6]

OR

- Q6)** a) Draw and explain Schematic diagram of T1 carrier System. What is the Data rate Supported? [6]  
b) List and explain all types of ARQ System. [10]

### SECTION - II

- Q7)** Write short notes on (any three) : [18]  
a) Bluetooth  
b) Frame Relay  
c) Ethernet  
d) PSTN

OR

- Q8)** a) Write note : [8]  
i) wireless LAN  
ii) Virtual LAN  
b) Explain the layers in OSI-ISO reference model what is the difference between TCP/IP model and OSI model. [10]

- Q9)** a) Explain the switching techniques used in computer data communication. [8]  
b) Explain wireless transmission media in detail. [8]

OR

- Q10)** a) Define digital hierarchy used by telephone companies. List and explain different levels of hierarchy. [8]  
b) Explain Network Hardware Components viz connectors, repeaters, hubs, NICS, Bridges and switches. [8]

- Q11)** a) Explain different data link layer design issues. [8]  
b) Explain stop and wait protocol. [8]

OR

- Q12)** a) Write note on : [8]  
i) ALOHA  
ii) CSMA  
b) Explain sliding window protocol. [8]

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