2007 ANDHRA UNIVERSITY
III B.TECH II SEMESTER DEGREE EXAMINATION
B.TECH COMPUTER SCIENCE ENGINEERING
DATA COMMUNICATIONS

TIME : 3 HOUR
MARK : 70

FIRST QUESTION IS COMPULSORY

ANSWER ANY FOUR FROM THE REMAINING QUESTIONS

ALL QUESTIONS CARRY EQUAL MARKS

ANSWER ALL PARTS OF ANY QUESTION AT ONE PLACE

1. a) Write the major components of a Data Communication System.

b) Compute the maximum bit rate for a voice channel with Signal-to-noise ratio of 20dB.

c) For a CAT 5 UTP cable, write its Bandwidth, Data Rate, and Distance

d) What do you understand by Companding?

e) Show the null modem connection details used between two DTEs.

f) Distinguish between dumb terminal and intelligent terminal.

g) What do you understand by Pulse Stuffing?

2. a) Distinguish between Data Processing and Data Communications. What are the various communication tasks that are being performed in a data communication system.

b) Define the following terms with suitable examples: Data, Information, Analog data, Digital data, Signal, Signalling and data transmission.

3. a) Compare the various types of transmission facilities for data communications for an intended application of your choice. On the basis of your findings, draw whatever conclusions you can for selecting the most economically attractive alternative.

b) Write clearly the capabilities, limitations and applicability issues of NRZ and RZ codes.

4. a) Write the requirements of a good signal design for data encoding? Identify the more practically used encoding schemes for various LAN topologies and Wide Area Networks.

b) Distinguish between EIA-232-E and ISDN physical interfaces in respect of four important characteristics.

5. a) A data source produces 8-bit ASCII characters. Derive an expression for the maximum data rate (rate of ASCII data bits) over a B-bps line for the following:

i) Asynchronous transmission with a 1.5 unit stop bit

ii) Synchronous transmission with a frame consisting of 48 control bits and 128 information bits. The information field contains 8-bit ASCII characters.

b) What are the error control codes for synchronous serial data communications? Find such codes for the following messages:

i) DATA COMM (ASCII hex : 44 41 54 41 20 43 4F 4D)

ii) 100010010000011010100

6. a) Describe the role of a terminal in data communication system. Briefly explain different types of terminals used for different applications.

b) Compare the following communication processing devices:
MULTIPLEXER. CONCENTRATOR and FRONT-END PROCESSOR

7. a) Use sketches and additional text to describe the following with respect to BAUD RATE, BIT RATE, and BANDWIDTH i) FSK modem ii) 4.phase PSK modem

b) Explain in terms of Data Link Control and physical layer concepts how error and flow control are accomplished in Synchronous Time division multiplexing.

8. Write short notes on the following:

a) Protocol Architecture b) Effect of bandwidth on a digital signal

c) HDLC d) Statistical Division Multiplexing