B.E. (Computer Science Engineering) Fifth Semester (C.B.S.)
Data Communication

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Notes : 1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.
10. Illustrate your answers whenever necessary with the help of neat sketches.
11. Use of non-programmable calculator is permitted.

1. a) Compare between   **6**
i) Analog and Digital signals.   ii) Periodic and aperiodic signals.

b) List the three different techniques in serial transmission and explain the differences.   **7**

OR

2. a) Explain simplex, half duplex and full duplex communication with help of diagram.   **7**

b) A periodic composite signal with a band width of 3000Hz is composed of two sine waves.   **6**
The first one has a frequency of 100Hz with maximum amplitude of 30v, the second has a
maximum amplitude of 10v. Show the sketches for bandwidth.

3. a) Define baseline wandering and its effect on digital transmission.   **6**

b) What is the number of bits per band for the following techniques?   **7**
i) ASK with four different amplitudes.
ii) FSK with 8 different frequencies.
iii) PSK with 4 different phases.

OR

4. Explain the characteristics of line coding scheme. Digital data 10011100 is to be   **13**
transmitted. Draw the resulting wave forms of the following methods.
i) Polar NRZ – 1   ii) AMI
iii) Unipolar NRZ   iv) Manchester.
v) Pseudoternary.

5. a) What is the purpose of cladding in an optical fiber?   **6**

b) List and explain the advantages of optical fiber over twisted pair and co-axial cable   **7**

OR

6.	a)	Explain the structure of twisted pair cables. why is the need of twisting the cables.	**6**
	b)	Explain Radio wave and satellite communication in detail.	**7**
7.	a)	Distinguish between synchronous and statistical TDM.	**7**
	b)	Ten courses, six with a bit rate of 200kbps and four with a bit rate of 400 kbps are to be combined using multilevel TDM with no synchronizing bits. Answer the following. i) What is the size of the frame in bits? ii) What is the frame rate? iii) What is the duration of bit frame? iv) What is the data rate?	**7**

OR

8.	a)	Explain digital subscriber line in details.	**7**
	b)	Assume that the voice channel occupies a band width of 4KHz. we need to multiplex 10 voice channels with guard bands of 500Hz using FDM. calculate the required bandwidth.	**7**
9.	a)	Explain video compression.	**6**
	b)	Describe the block diagram of JPEG encoder and explain it.	**7**

OR

10.	a)	Explain following methods. i) Runlength encoding. ii) Relative encoding.	**8**
	b)	Explain comparison of various methods of compression.	**5**
11.	a)	Explain in detail lempel – ziv Encoding technique.	**7**
	b)	Construct a variable length coding for the string of data 50, 25,15,40,75. Explain its advantages and disadvantages in detail.	**7**

OR

12.		Write short notes on	**14**

i)   Huffman coding.   ii)   RTP

iii) HTTP.

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