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

Data Communication

P. Pages : 2 **NRJ/KW/17/4488**

Time : Three Hours * 0 4 1 2 * Max. Marks : 80

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.

1. a) Is the frequency domain plot of a voice signal discrete or continuous? Explain with reasons. **7**

b) Explain Simplex, half duplex and full duplex communication with the help of diagram. **6**

OR

2. a) Write a notes on : **6**

i) Analog Signals

ii) Digital Signals

b) How many bits can fit on a link with 2 ms delay if the bandwidth of the link is : **7**

i) 1 Mbps ii) 10 Mbps

iii) 100 Mbps

3. a) Define carrier signal and its role in analog transmission. **5**

b) Which are the different techniques of digital to digital conversion. Explain each of them. **8**

OR

4. What are the characteristics of line coding scheme. Digital data 11011010 is to be transmitted. **13**
Draw the resulting wave forms of the following method.

i) Polar NRZ - 1 ii) Unipolar NRZ

iii) Pseudo ternary iv) AMI

v) Manchester

5. a) Explain following in detail. **8**

i) Cellular Telephony

ii) Propagation of radio waves.

b) Explain the structure of twisted pair cables. **6**

OR

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

b) Compare guided and unguided transmission media. **7**

7. a) Assume the voice channel occupies a bandwidth of 4 KHz. We need to multiplex 10 voice channels with guard bands of 500 Hz. Using FDM Calculate the required bandwidth. **7**

b) Explain FHSS in detail. **7**

OR

8. a) Write a note on : **8**

i) FDM

ii) WDM

b) Explain digital subscriber in detail. **6**

9. a) Explain comparison of various methods of compression. **6**

b) Draw and describe the block diagram of JPEG encoder. **7**

OR

10. a) Write a note on : **8**

i) Relative Encoding.

ii) Runlength Encoding

b) Define digital video. Compare all types of digital video. **5**

11. a) Construct variable length coding for the string of data 50, 25, 15, 40, 75. Explain its advantages and disadvantages in detail. **7**

b) Explain Lampel - Ziv Encoding technique for compression in detail. **6**

OR

12. Write a short note on : **13**
i) RTP
ii) HTTP
iii) Huffman Coding

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