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

Data Communication

P. Pages : 2 **NIR/KW/18/3433**

Time : Three Hours * 1 8 6 * 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. Assume suitable data whenever necessary.
9. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Compare. **6**
i) Analog and digital signal.
ii) Periodic and Aperiodic signal.

b) A non periodic composite signal contains frequencies from 10 to 40 kHz. The peak amplitude is 12V for the lowest and the highest signal. Amplitude is 30V for the 20 kHz signal. Assuming that the amplitude change gradually from the minimum to the maximum, draw the frequency spectrum. **7**

OR

2. a) Differentiate between **6**
i) Baseband Vs Broadband transmission.
ii) Serial Vs Parallel transmission.

b) In detail explain simplex, half duplex and full duplex. **7**

3. a) Digital data 11010101 is to be transmitted. Draw resulting waveform for the Manchester, AMI, unipolar NRZ and polar NRZ-L Pseudoternary. **6**

b) What is PCM? Discuss the block schematic of PCM in detail. **7**

OR

4. a) Draw ASK, FSK and PSK for 11000101. **6**

b) Calculate the bit rate for the given baud rate and type of modulation. **7**
a) 1000 baud, FSK.
b) 1000 baud, ASK.
c) 1000 baud, BPSK.
d) 1000 baud, 16 – QAM.

5. a) Write a note on co-axial cable. **7**

b) With the help of neat sketch give the cable composition of fibre optic cable. **6**

OR

6. a) State the components of cellular systems and give significance of frequency reuse. **7**

b) Explain step index and graded index mode in FOC. **6**

7. a) In detail explain frequency Division multiplexing and demultiplexing. **7**

b) Assume that a voice channel occupies a bandwidth of 4 kHz. We need to combine three voice channels into a link with a bandwidth of 12 kHz, from 20 to 32 kHz. Show the configuration, using the frequency domain. Assume there are no guard bands. **7**

OR

8. a) State the analog hierarchy for analog carrier system. **7**

b) Three input connections each of 3 kbps is to be multiplexed. If 1 bit at a time is multiplexed (a unit is 1 bit). What is the duration of (a) each input slot, (b) each output slot & (c) each frame. **7**

9. a) Briefly explain the concept of lossy compression. **6**

b) Give the significance of I, P and B frames. **7**

OR

10. a) Elaborate various processes involved in JPEG. **7**

b) Write a short note on spatial compression and temporal compression. **6**

11. a) Draw the Huffman tree for the given data and device the Huffman code for respective symbol. **10**

Symbol	A	B	C	D	E
Frequency of symbol	23	32	15	12	18

b) Write a note on HTTP and WWW. **4**

OR

12. a) Explain compression and Decompression in Lempel Ziv encoding. **10**

b) With example explain Run length encoding. **4**

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All our dreams can come true if we have the courage to pursue them.

~ Walt Disney