

Data Communication

P. Pages : 2

Time : Three Hours



KNT/KW/16/7349

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.
 10. Illustrate your answers whenever necessary with the help of neat sketches.
 11. Use of non programmable calculator is permitted.

1. a) What is the bandwidth of a signal that can be decomposed into five sine waves with frequencies at 0, 30, 40, 120 and 300 Hz? All peak amplitudes are the same. Draw the bandwidth. **4**
- b) Distinguish between Analog signal & digital signal. **4**
- c) List and explain three different techniques in serial transmission and explain the differences. **6**

OR

2. a) Differentiate between synchronous and asynchronous transmission. Also explain them by giving one example. **6**
- b) A non periodic composite signal contains frequencies from 10 to 40 KHz. The peak amplitude is 12V for the lowest and the highest signals and is 30V for the 20 KHz signal. Assuming that the amplitudes change gradually from the minimum to maximum, draw the frequency spectrum. **4**
- c) Can we say if a signal is periodic or non-periodic by just looking at its frequency domain plot? How? **4**
3. a) List and explain any five line coding schemes. **5**
- b) Digital data 1001100 is to be transmitted. Draw the resulting wave forms for the following methods. **8**
- i) Polar NRZ
 - ii) AMI
 - iii) Manchester
 - iv) Pseudoternary

OR

- 4 a) Which of the four digital - to - analog conversion techniques (ASK, FSK, PSK and QAM) is the most susceptible to noise? Defend your answer. **5**

- b) What are the different methods for analog - to - analog conversion of signals. Explain each of them. **8**
5. a) How do guided media differ from unguided media? **4**
- b) Differentiate between 'Dish Antenna & Horn Antenna. **6**
- c) What is the significance of twisting in twisted pair cable. **3**
- OR**
6. a) Write a short notes on **any two**. **10**
- i) Satellite communication
- ii) Cellular Telephony.
- iii) Propagation of radio waves.
- b) List the advantages of optical fibre over twisted pair and coaxial cable. **3**
7. a) Write a short note on **any two**. **8**
- i) Time Division multiplexing.
- ii) Frequency Division multiplexing.
- iii) Wave division multiplexing.
- b) Define spread spectrum and its goal. List the two spread spectrum techniques. **5**
- OR**
8. a) What is FHSS? Explain. **6**
- b) Define xDSL in detail. **7**
9. a) Write a short note on MPEG video compression technique. **6**
- b) Draw the block diagram of JPEG encoder and explain. **7**
- OR**
10. a) Explain WWW and also define static page and dynamic page. **8**
- b) What is digital video? Compare all types of digital video. **5**
11. a) What is lossless compression? Explain Lempel - Ziv Encoding technique for compression in detail. **7**
- b) Write a short note on 'Run Length Encoding'. **7**
- OR**
12. Write a short note on **any three**. **14**
- i) RTP ii) HTTP
- iii) Relative encoding iv) Huffman Coding.
