DPIT127 – Networks and Communications

Week 2 Tutorial

Chapter 1 & 2:

1. Define Computer Network, Data Communication, Telecommunication, LAN, MAN, WAN and PAN?
2. Identify each of different forms with the help of network connections; LAN to LAN, LAN to WAN, Microcomputer to LAN, Satellite and Microwave Network?
3. What is the difference between data and signal? Explain different types of data and signals? What are the main advantages of digital signals over analog signals?
4. What is the definition of the term "baud rate"? How does baud rate differ from bits per second?
5. Draw in chart form the voltage representation of the bit pattern 11010010 for the digital encoding schemes NRZ-L, NRZI, Manchester, and differential Manchester.
6. Draw or give an example of a signal for each of the following conditions: the baud rate is equal to the bit rate, the baud rate is greater than the bit rate, and the baud rate is less than the bit rate.
7. You just created a pulse code modulated signal, but it is not a good representation of the original data. What can you do to improve the accuracy of the modulated signal?
8. Draw an example signal, using NRZI, in which the signal never changes for 7 bits. What does the equivalent differential Manchester encoding look like?
9. Show the equivalent analog sine-wave pattern of the bit string 00110101 using amplitude shift keying, frequency shift keying, and phase-shift keying.
10. What is the baud rate of a digital signal that employs differential Manchester and has a data transfer rate of 2000 bps? What is the data transfer rate in bps of a signal that is encoded using phase modulation with 8 different phase angles and a baud rate of 2000? If quadrature amplitude modulation is used to transmit a signal with a baud rate of 8000, what is the corresponding bit rate?