**CSIT127**

**Lab1 Signal and data, Transmission medium**

1. What are the main advantages of digital signals over analog signals?

2. What is the definition of the term “baud rate”? How does baud rate differ from bits per second?

3. Draw in chart form the voltage representation of the bit pattern 11010010 for the digital encoding schemes NRZ-L, NRZI, Manchester, and differential Manchester. **(HAND DRAW the Voltage representation for better UNDERSTANDING)**

4. 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.

5. List three common examples of frequency division multiplexing.

6. Frequency division multiplexing is associated with what type of signals?

7. In what order does synchronous time division multiplexing sample each of the incoming signals?

8. Using a laptop computer with a wireless connection into the company’s local area network, you download a Web page from the Internet. List all the different network connections involved in this operation.

9. You are working from home using a microcomputer, a DSL modem, and a telephone connection to the Internet. Your company is connected to the Internet and has both local area networks and a mainframe computer. List all the different network connections involved in this operation.

10. With your new cell phone, you have just taken a snapshot of your best friend. You decide to send this snapshot to the e-mail account of a mutual friend across the country. List all the different network connections involved in this operation.

11. You are driving in a new city and have just gotten lost. Using your car’s built-in navigational system, you submit a request for driving directions from a nearby intersection to your destination. List all the different network connections involved in this operation.

12. List the OSI layer that performs each of the following functions:  
a. Data compression  
b. Multiplexing  
c. Routing  
d. Definition of a signal’s electrical characteristics  
e. E-mail  
f. Error detection  
g. End-to-end flow control