LAB EXERCISE 3 : DATA & SIGNAL

1. Draw two sine waves on the SAME time-domain plot. The characteristics are as follows.
   Signal A (use red ink): amplitude 4, frequency 6, phase 0
   Signal B (use other ink: amplitude 5, frequency 4, phase 90 (3 Marks)

2. A period composite signal with a bandwidth of 200 MHz is composed of two sine waves. The first has a frequency of 100 Hz with maximum amplitude of 20V; the second has a maximum amplitude of 5V. Draw the frequency spectrum. (3 Marks)

3. Differentiate between baseband and bandpass transmission. (2 Marks)

4. In a digital transmission, the sender clock is 0.2 percent faster than the receiver clock. How many extra bits per second does the sender send if the data rate is 1 Mbps? (2 Marks)

5. If a signal wave has a frequency of 50 Hz. Determine the period of the signal. (1 Mark)

6. A sine wave is offset 1/8 cycle with respect to time 0. Determine its phase in degrees and radians. (2 Marks)

7. A signal is carrying data in which two data elements is encoded as three signal elements. The bit rate is 50 Kbps and the value of c = 1/2. Find the value of r and calculate the average value of the baud rate. (2 Marks)