



Faculty of Engineering

Department of Computer Engineering

Data Com Lab

"Homework 2"

Submitted By:

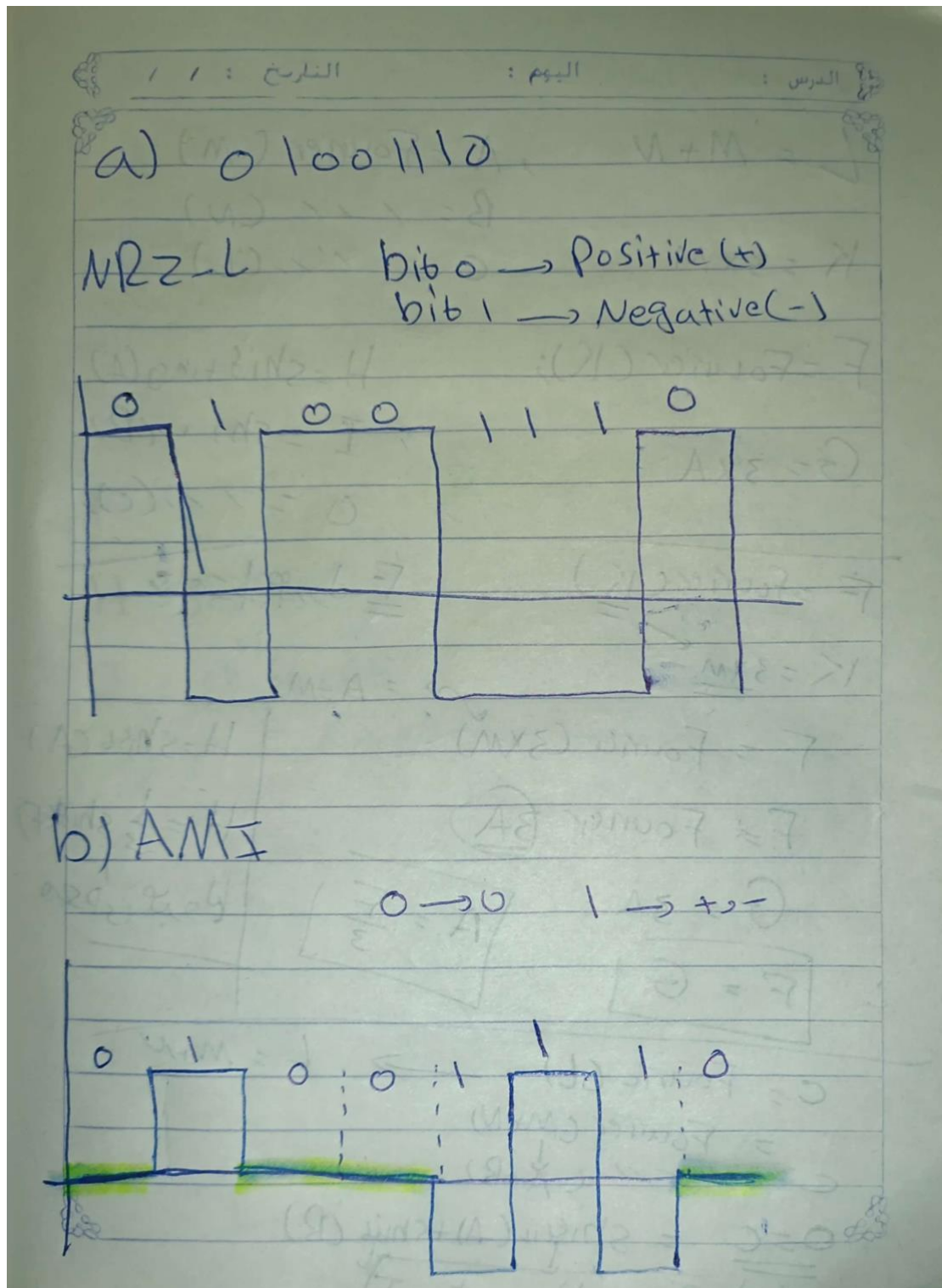
Musab Alaswed

No:120221213

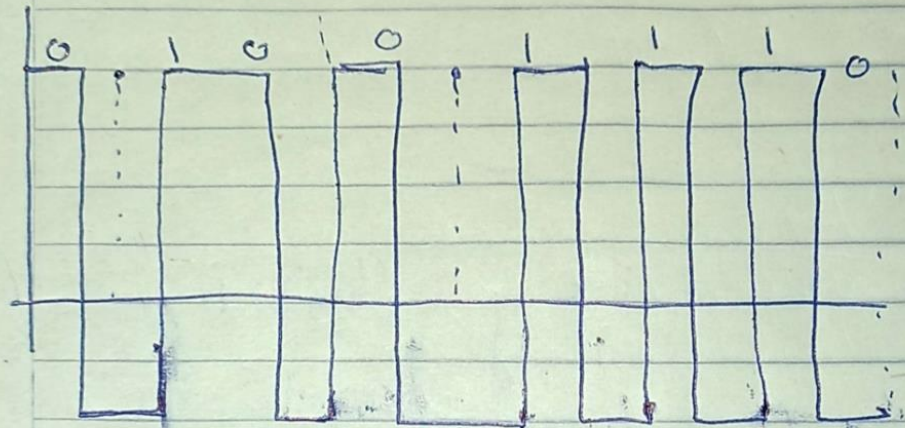
Submitted To:

Eng.Abdauallah Ouda

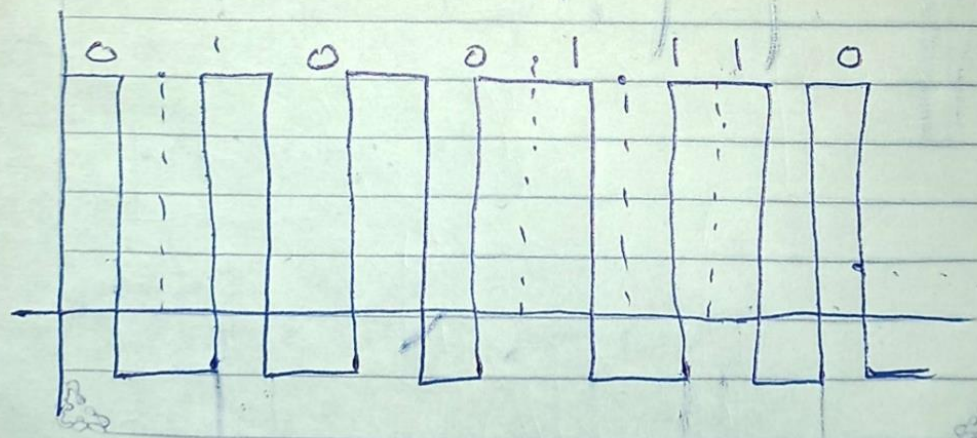
Q1: For the bit stream 01001110, sketch the waveforms for each of the following codes: (a) NRZ-L. Assume, the signal level of preceding bit is positive voltage. (b) Multi-level Bipolar AMI - Assume, the most recent bit 1 is represented by negative voltage. (c) Manchester. (d) Differential Manchester - Assume, the signal level of preceding bit is negative voltage.



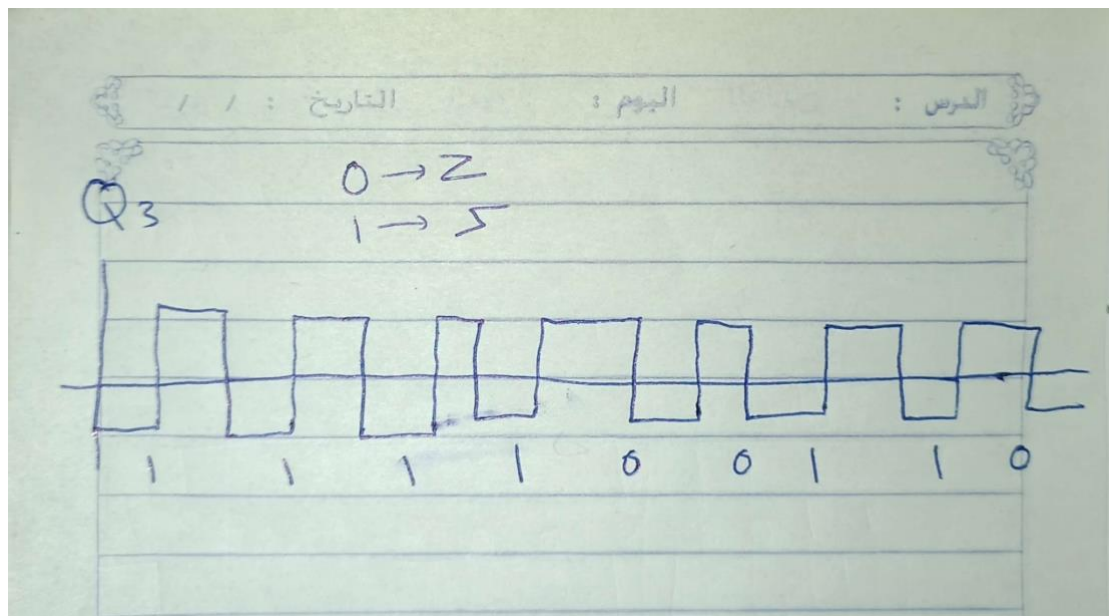
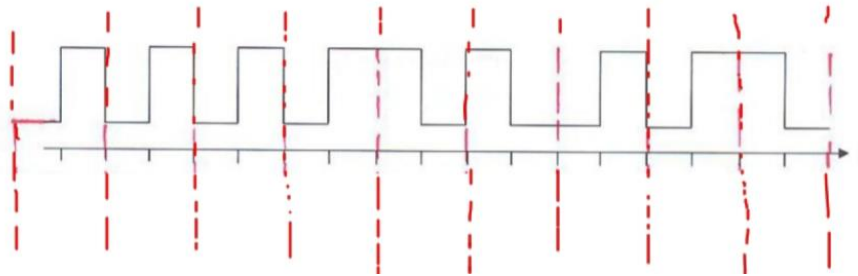
c) Manchester 0 → 
 1 → 



d) different Manchester:



Q3: : Suppose the waveform below comes from Manchester encoded binary data stream. Extract timing information and give the data binary sequence.



Q4: A telephone subscriber line must have an SNR_{dB} above 40. What is the minimum number of bits per sample?

$$Q4) SNR_{dB} = (6.02 \times nb) + 1.76$$

$$40 = 6.02nb + 1.76$$

$$\frac{38.24}{6.02} = \frac{6.02}{6.02} nb$$

$$\therefore nb = 6.35 \approx 7 \text{ bits per sample}$$