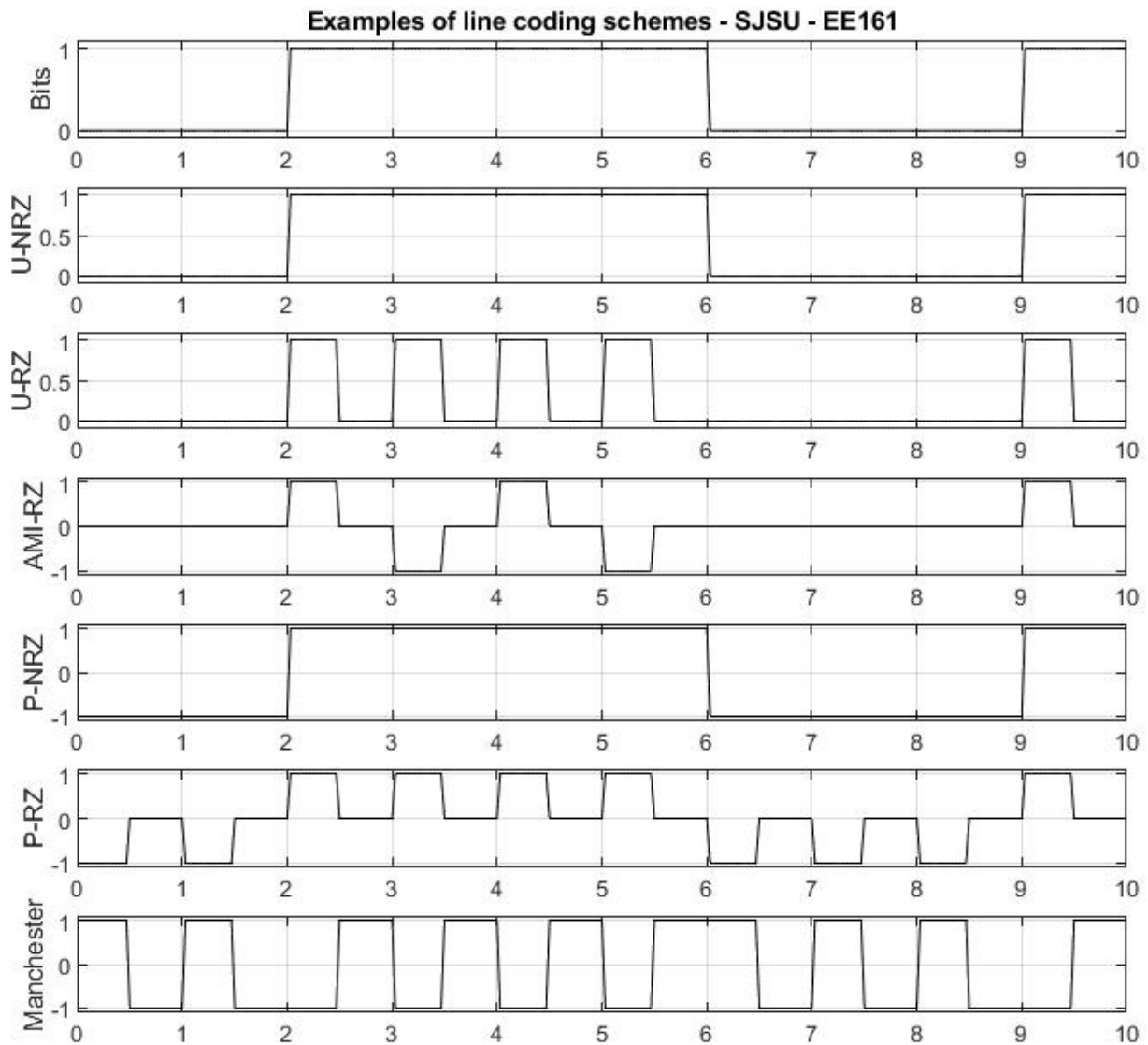


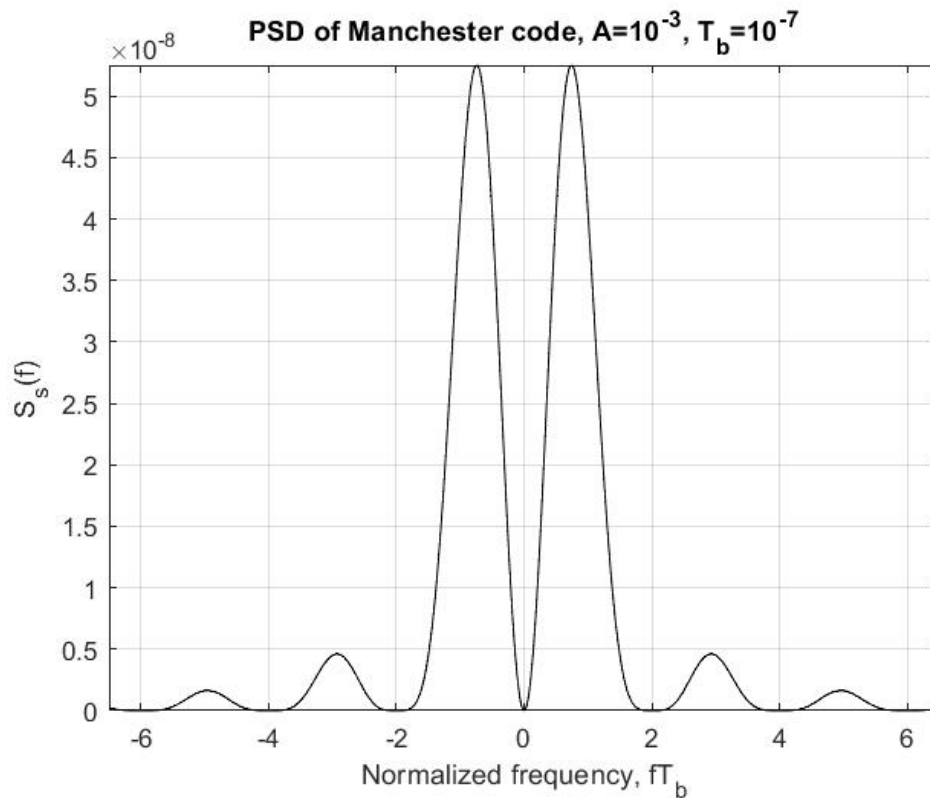
## Solution of Homework # 1

1. Pulse shaping

Below is the result of the script with input ID number 123



## 2. Polar Manchester signaling



3. We have  $\mu_X = 2$  and  $\sigma_X = \sqrt{3}$ :

$$(a) \ P[X \leq 0] = 1 - P[X > 0] = 1 - Q\left(\frac{0-2}{\sqrt{3}}\right) = Q\left(\frac{2}{\sqrt{3}}\right) = \underline{0.124}$$

$$(b) \ P[X > 3] = Q\left(\frac{3-2}{\sqrt{3}}\right) = Q\left(\frac{1}{\sqrt{3}}\right) = \underline{0.282}$$

$$(c) \ P[0 < X \leq 2] = Q\left(\frac{0-2}{\sqrt{3}}\right) - Q\left(\frac{2-2}{\sqrt{3}}\right) = \frac{1}{2} - Q\left(\frac{2}{\sqrt{3}}\right) = \underline{0.376}$$