5.1) Manchester has a pulse edge every pulse. Polar NRZ may have many bit intervals without a pulse edge.

5.2) A) Manchester has a pulse edge every pulse. Polar NRZ may have many bit intervals without a pulse edge.

B) Manchester has 0 DC content. Polar NRZ has 0 DC content on average. A long string of 1s or 0s may cause a shift in the DC level of polar NRZ.

C) Manchester requires twice the BW of polar NRZ.
5.3) \( P_e = 0.0018 \)

5.5) 

A)

B) The sample times and sample values are indicated by the vertical lines in the plot above.

C) \( V_T = 0 \)

5.6) 

A) \( \sigma_n^2 = 1.1 \times 10^{-6} \) \( V^2 \)

B) \( P_e = Q(4.767) = 9.35 \times 10^{-7} \approx 1 \times 10^{-6} \)