Read Chapter 8

1. Determine the noise power at $T = 290$ K, $f = 10$ GHz, and $\Delta f = 1$ Hz. Determine the noise power at liquid helium temperature (4 K). What is the value of the error if the standard Nyquist formula is used?

2. Problem 8.2 in the text.

3. Problem 8.3 in the text.

4. A MESFET has a base width $W = 350$ $\mu$m and at 3 GHz with a given bias is found to have $g_m = 70$ mS, $R_g = 5$ $\Omega$, $R_d = 7$ $\Omega$, $R_s = 5$ $\Omega$, and $C_{gs} = 0.3$ pF. What are the four noise parameters $F_{\text{min}}$, $R_n$, $R_{\text{opt}}$, and $X_{\text{opt}}$? If the base width is changed to $W' = 200\mu$m and the number of base fingers remains unchanged, what are the four noise parameters?

5. Problem 8.5 in the text.