Quiz 3 will be inspired by these questions as well as questions from the midterm, but will probably not be exactly like any one of them or be worded in the same way. It may also ask you questions that build on or apply the ideas explored in the questions below. So, it is important that you understand the underlying ideas, not just be able to parrot them.

1. Question 3.12 from the Sklar text.
2. Question 3.13 from the Sklar text.
3. Question 3.14 from the Sklar text.
4. Question 3.15 from the Sklar text.
5. Question 3.17 from the Sklar text.
6. Question 3.18 from the Sklar text.
7. Find the output of the matched filter if the input is a rectangular pulse of height A and duration T. What is the SNR assuming white noise of PSD $N_o/2$.
8. Repeat the problem above assuming an RC filter is used instead of a matched filter.
9. A channel has a discrete-time impulse response of $h[k] = [1, -0.5, 0.1]$. The input signal is $m_k \in \{0, 1\}$ and that the output signal is s_k.
    1. Draw the state-transition diagram equivalent of this channel (circles containing the state of the channel, transitions between states labeled with (m_k, s_k).
    2. For the question above sketch one stage of the trellis complete trellis diagram (i.e. don't assume any initial or final conditions). Make sure the states are clearly labelled and again demarcate the branches with (m_k, s_k).
    3. Draw the trellis assuming your first two output signals are 0.5 and -0.2 (assuming that you started in the all zeros state). Label the branch weights.