Sample Problems for the Quiz on 8th Dec.

1. 

\[ 5.12 \text{ Determine the ML phase estimate for offset QPSK.} \]

2. 

\[ 5.17 \text{ Determine the ML estimate of the time delay } \tau \text{ for the QAM signal of the form} \]

\[ s(t) = \text{Re}[s_I(t; \tau)e^{i2\pi f_c t}] \]

where

\[ s_I(t; \tau) = \sum_n l_n g(t - nT - \tau) \]

and \( \{l_n\} \) is a sequence of complex-valued data.

3. 

\[ 5.18 \text{ Determine the joint ML estimate of } \tau \text{ and } \phi \text{ for a PAM signal.} \]

4. 

\[ 5.19 \text{ Determine the joint ML estimate of } \tau \text{ and } \phi \text{ for offset QPSK.} \]