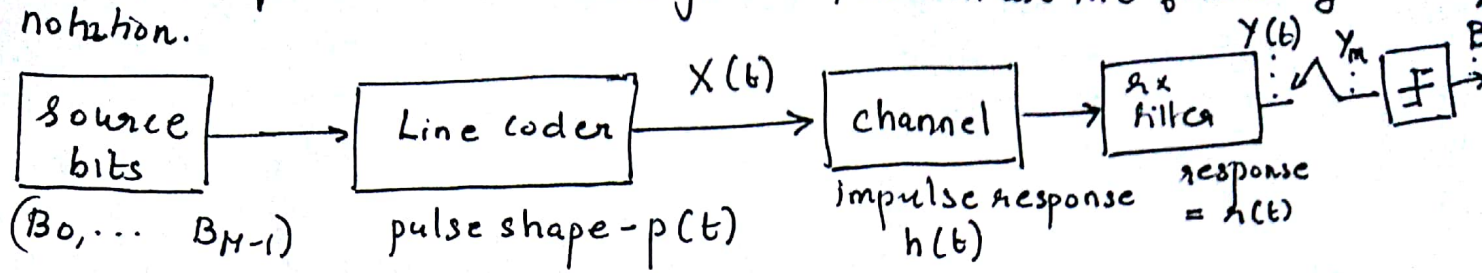


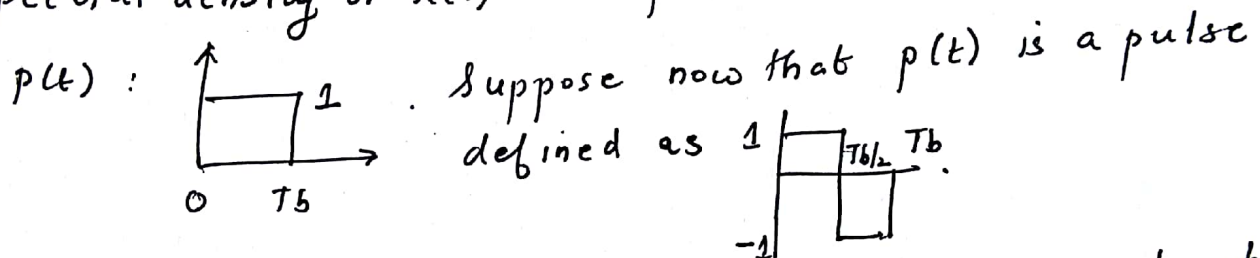
AV324 - Assignment 1.

For all the questions in this assignment, we will use the following notation.



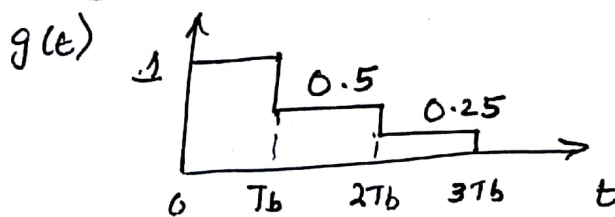
$$* X(t) = \sum_{m=0}^{M-1} A_m \cdot p(t - mT_b), \text{ where } A_m = 1 \text{ for } B_m = 1 \\ A_m = -1 \text{ for } B_m = 0$$

1) Suppose (B_0, \dots, B_{M-1}) are independent and Bernoulli distributed with $P\{B_m = 1\} = 0.5$. In class we had found out the energy spectral density of $X(t)$ when $p(t)$ is a rectangular pulse



What is the energy spectral density of $X(t)$ for this pulse shape?

2) Suppose the effective pulse shape $g(t)$ from the source to the sampler, (i.e. $g(t) = p(t) * h(t) * r(t)$) is the following



Design a tapped delay equalizer with 4 taps (so that you have weights w_0, w_1, w_2, w_3) so that the no-ISI condition is satisfied (as much as possible) at the output of the equalizer.