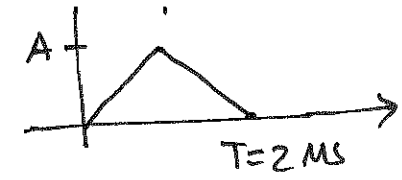
10.1 $h(t) = \sum_{i=1}^{2} \alpha_i \delta(t - \tau_i)$

$h(t) = \alpha_1 \delta(t - \tau_1) + \alpha_2 \delta(t - \tau_2)$

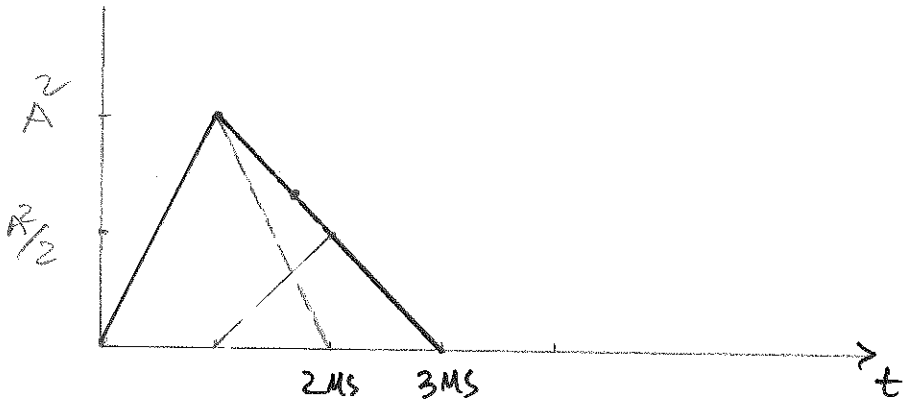
$g(t) = g_{tri}(t)$



(a) Largest bit rate for which ther is no signal overlap.

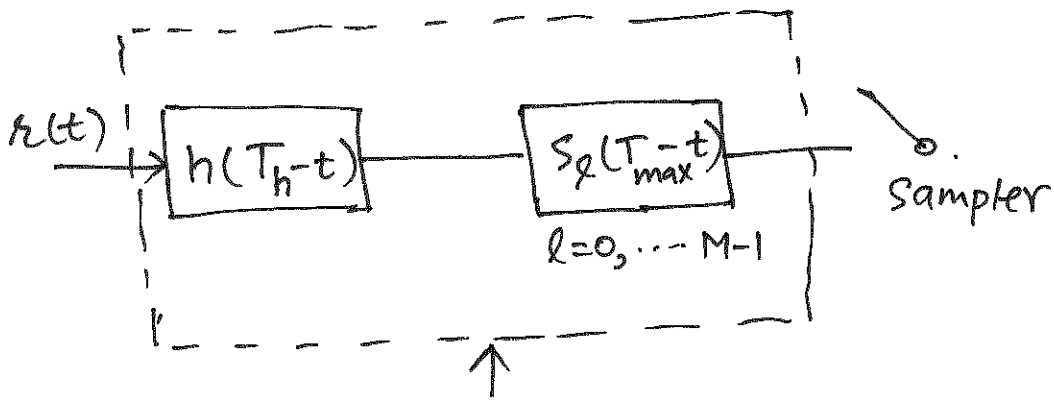
$R_b = \frac{1}{3\,MS} = .33$ Mbps

(b)



(C) - ML receiver with Channel Matching filter :
Refer to Lecture notes 9 (Fig. 4.17 compendium)

- Impulse response of the Matched filter :
To deal with overlapping waveforms, each matched filter $z_k(T_s - t)$ in Fig. 4.9 can be replaced with two matched filters in cascade. i.e.,



v(t) (Matched Filter response).

where $T_h = 1\,\mu s$ in this problem.