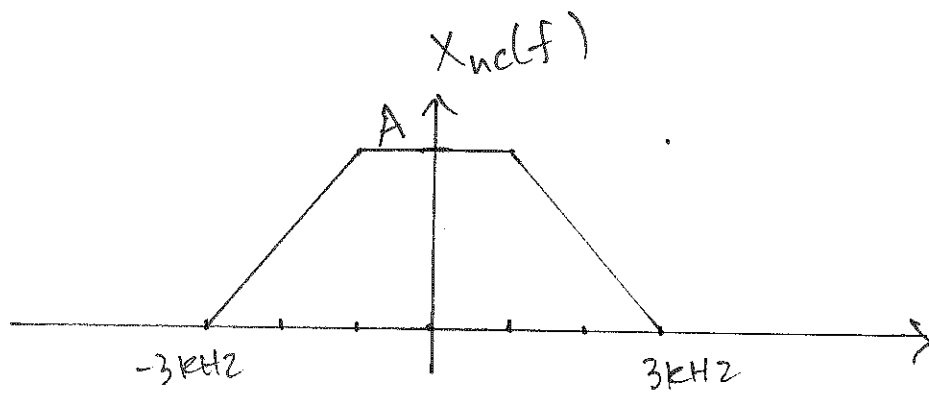
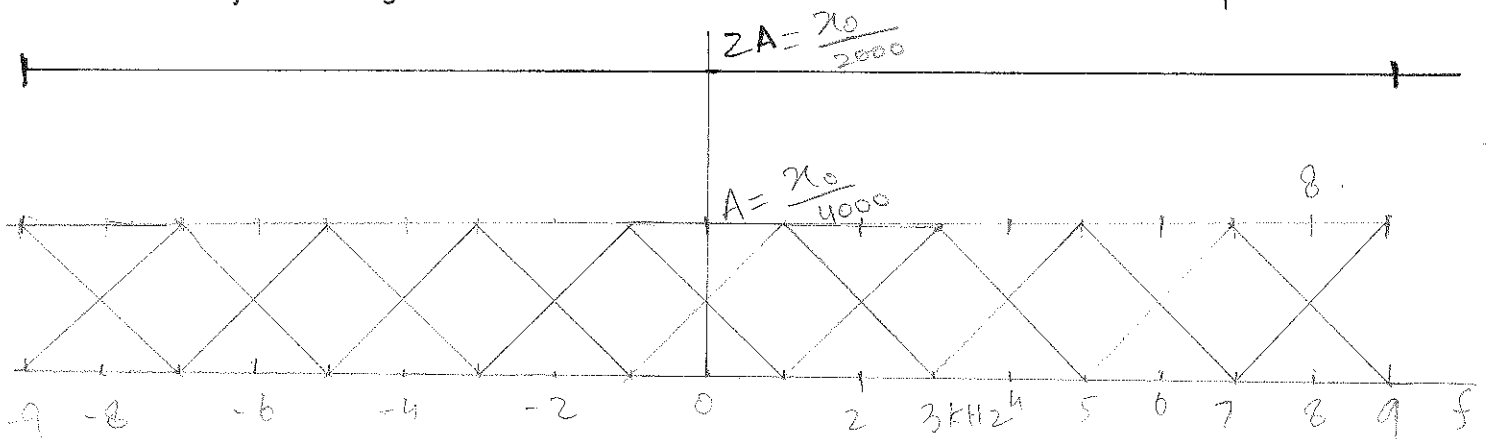


12.1



(a)  $\Rightarrow R_s = 4 \text{ kHz}$  (Max possible rate)  
 Since beyond  $R_s \neq 4 \text{ kHz}$ ,  $X_{nc}(f)$  won't be a constant (Nyquist condition for zero ISI)  
 $\Rightarrow A$  should be  $\frac{\lambda_0}{R_s}$  where  $\lambda_0$  is  $\lambda[i] = \delta[i] \lambda_0$  from  $(\because \text{Eq 6.33})$ .

(b) If  $R_s = 2000 \text{ symbols/sec}$  and  $A = \frac{\lambda_0}{4000}$



Nyquist condition for ISI free reception satisfied in this case.

For fixed  $\lambda(t)$  ISI free reception is obtained for all symbol rates  $R_s$  satisfying

$$R_s = \frac{R_s^*}{l} \quad l = 1, 2, 3, \dots \text{ (Eq 6.25) where } R_s^*$$

is the max possible rate