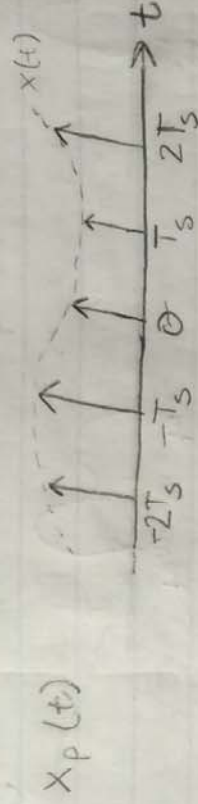
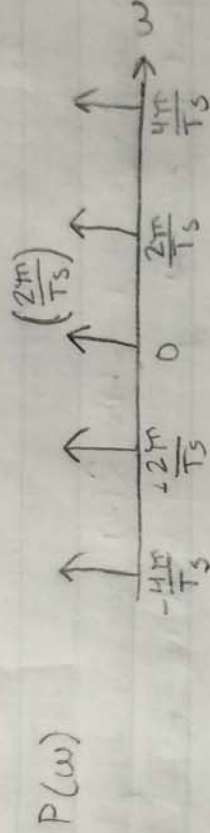


PS08: Sig Sys

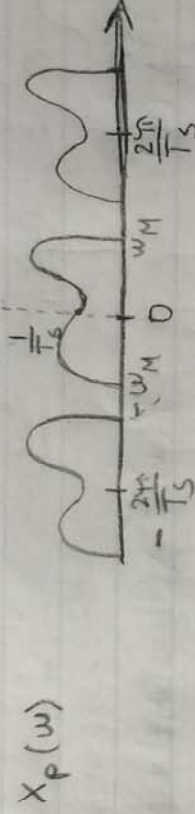
①



②

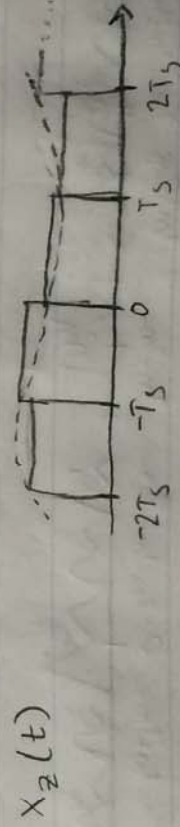


③

④ $\frac{2\pi}{T_s} > 2\omega_M \rightarrow \omega_0 > 2\omega_M \rightarrow$ Nyquist frequency

⑤ Multiply it by a new $H(\omega)$ that has value T_s from $-\omega_M$ to ω_M and is periodic. Then apply $\overset{\text{ideal}}{\text{low pass filter}}$ to $X_p(\omega)H(\omega)$ to recover $x(t)$

⑥

⑦ $X_2(\omega) = X_p(\omega)Z(\omega)$

$\rightarrow Z(\omega)$ is just half of a rectangular pulse shifted. So we know the transform of a rect pulse is $\text{sinc}(\omega \frac{T_s}{2})$. We then shift it: $e^{-j\omega \frac{T_s}{2}} \text{sinc}(\omega \frac{T_s}{2})$

