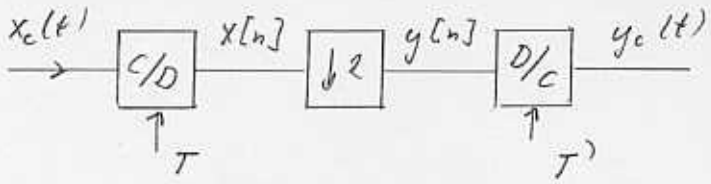
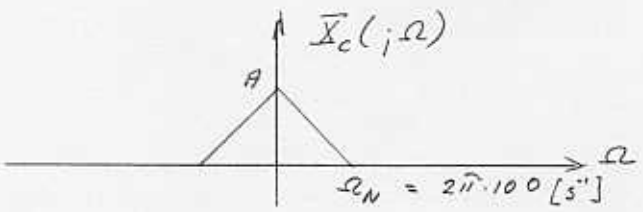
Opg 4.36 side 222

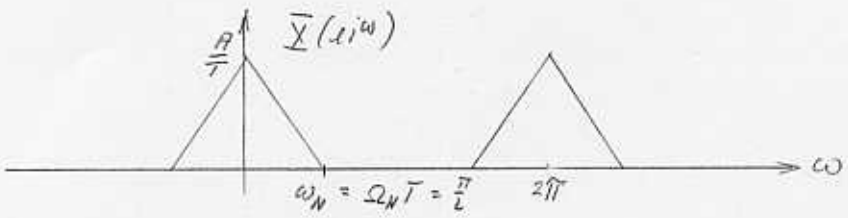
(Opg 3.21 side 139)



$$x[n] = x_c(nT)\Big|_{T \text{ normalt}} \qquad y[n] = x[2n]$$

a)



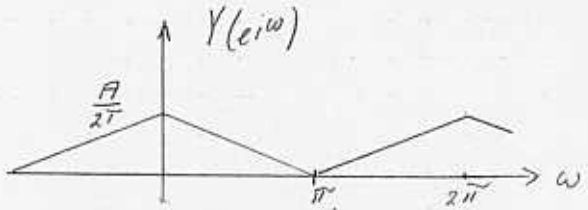


$$T = \frac{\frac{\pi}{2}}{\Omega_N}\Big|_{\Omega_N = 2\pi \cdot 100} = \frac{\pi}{2 \cdot 2 \cdot \pi \cdot 100} = 2{,}5\ ms \Rightarrow f_s = \frac{1}{T} = 400\ Hz$$

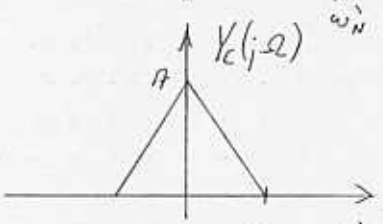
b) $\omega_N \le \frac{\pi}{M}$ $\quad \frac{\pi}{2} \le \frac{\pi}{2}$ ingen aliasering

$$T' = TM = 2{,}5 \cdot 2 = 5\ ms \Rightarrow f_s' = 200\ Hz$$

Bemærk:



i D/C ganges med "T'"



altså ingen forvrængning

$$\Omega_N = \frac{\omega_N'}{T'} = \frac{\pi}{5 \cdot 10^{-3}} = 2\pi \cdot 100\ [s^{-1}]$$