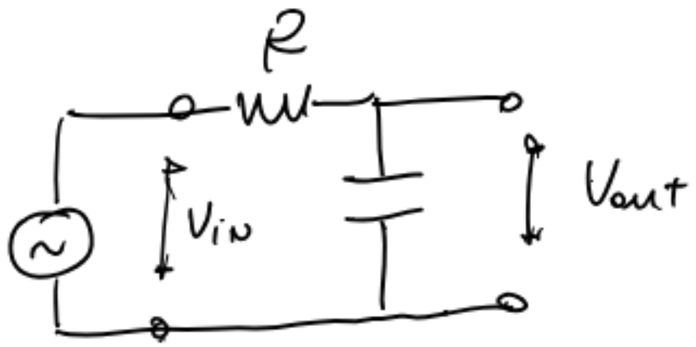
FILTRO RC PASSA BASSO



$$|T| = \left|\frac{V_{out}}{V_{in}}\right| = \frac{1}{\sqrt{1+(\omega RC)^2}}$$

ω / RC

f_{cut} ⇒ $T = \frac{1}{\sqrt{2}}$

$f_{cut} = 1\ kHz$

$\omega RC = 1$

$\omega = 2\pi f$

$2\pi f RC = 1$

$f_{cut} = \frac{1}{2\pi RC}$

$RC = \frac{1}{2\pi f_{cut}}$

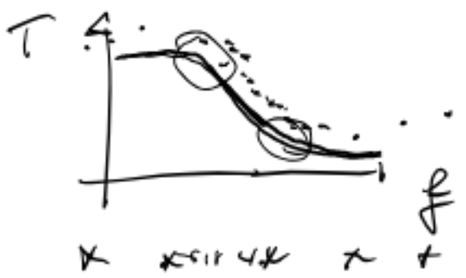
$RC = \frac{1}{2\pi \cdot 10^3}$

$\simeq \frac{1}{6} \cdot 10^{-3} \simeq 0.2 \cdot 10^{-3}$

$RC = 2 \cdot 10^{-4}$ ∈ τ

ES 1

MISURARE 10/20 punti



T(f)

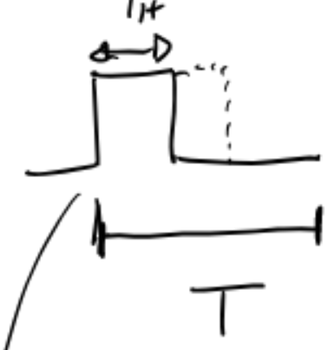
RC
CR
RC
LR
] ⇒ PASSA BANDA

ES 2

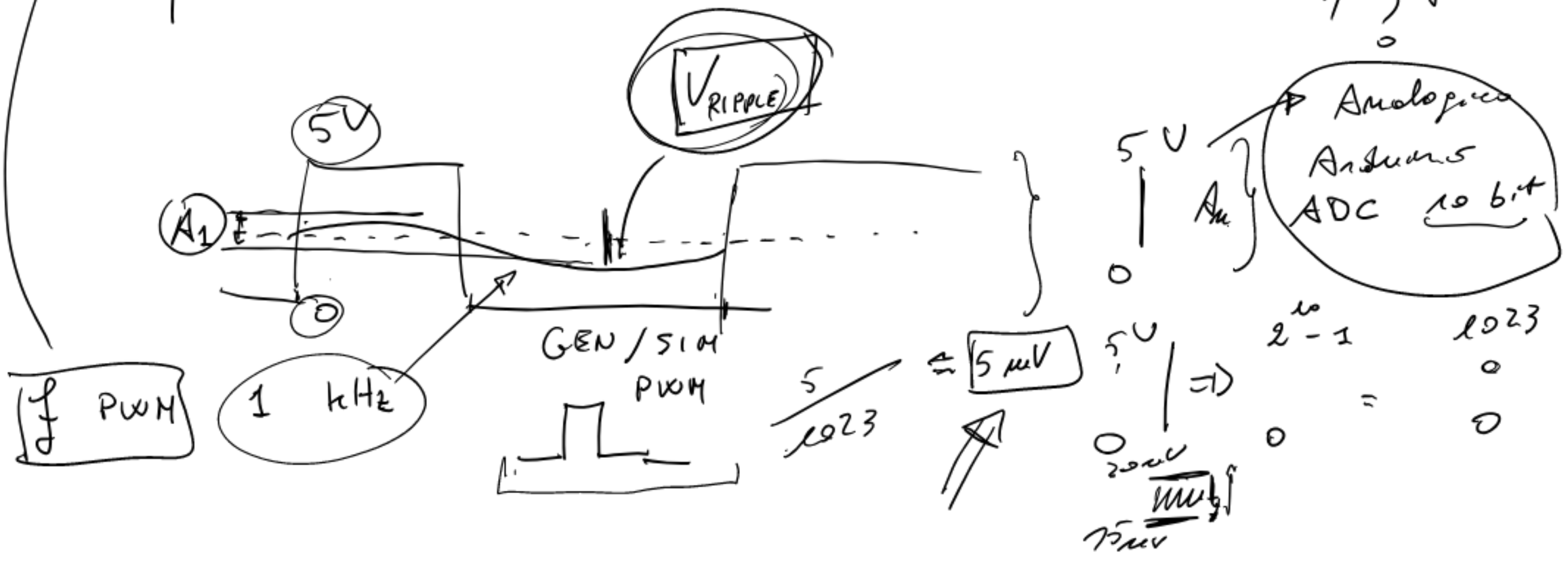
RC ⇒ V ANALOGICO

PWM ⇒ V ANALOGICO

PWM



$$\frac{T_H}{T} = DC$$



$f_{CUT} = 1\ kHz \Rightarrow RC \approx 2 \cdot 10^{-4}$

$\underline{Z} = R - jX_C \Rightarrow |I| < I_{MAX}$

$V_{IN} = 10\ V$ $\quad R = 1\ k\Omega$ $\quad C = 2 \cdot 10^{-7}\ F = 0{,}2\ \mu F$
$= 200\ nF$

$1\ kHz$

$V_{PWM} = 5\ V$

$V_{RIPPLE} \simeq 5\ mV$

f_{PWM} 1 kHz

RC

PWM COM MULTISIM ?

PWM

10% ÷ 90%