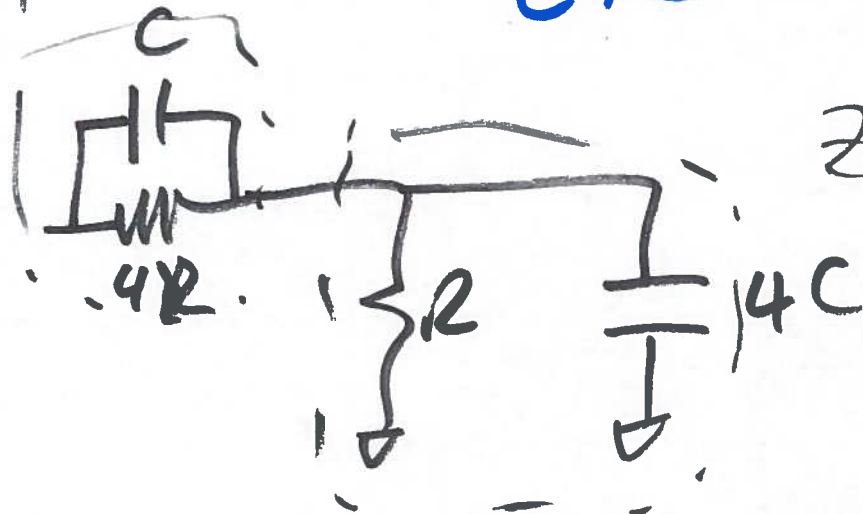


EE 420L

LAB 2

Z_1



$$Z_2 = R \cdot \frac{1}{s4C}$$

$$\frac{R \cdot \frac{1}{s4C}}{R + \frac{1}{s4C}} = \frac{R}{1 + s4CR}$$

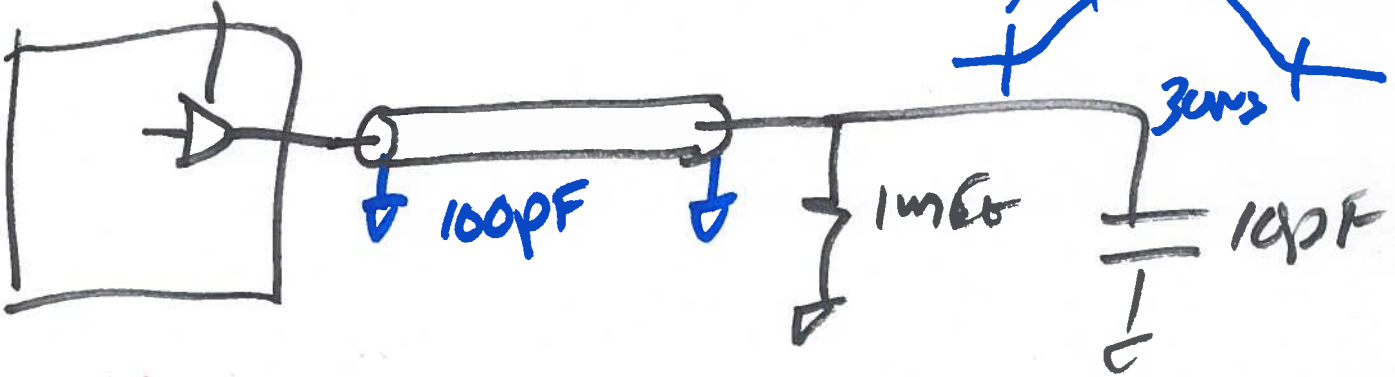
$$Z_1 = \frac{4R \cdot \frac{1}{sC}}{4R + \frac{1}{sC}} = \frac{4R}{1 + 4RSC}$$

$$\frac{V_{NT}}{V_{IN}} = \frac{Z_2}{Z_1 + Z_2} = \frac{\frac{R}{1 + s4CR}}{\frac{R}{1 + s4CR} + \frac{4R}{1 + s4CR}} = \frac{1}{5}$$

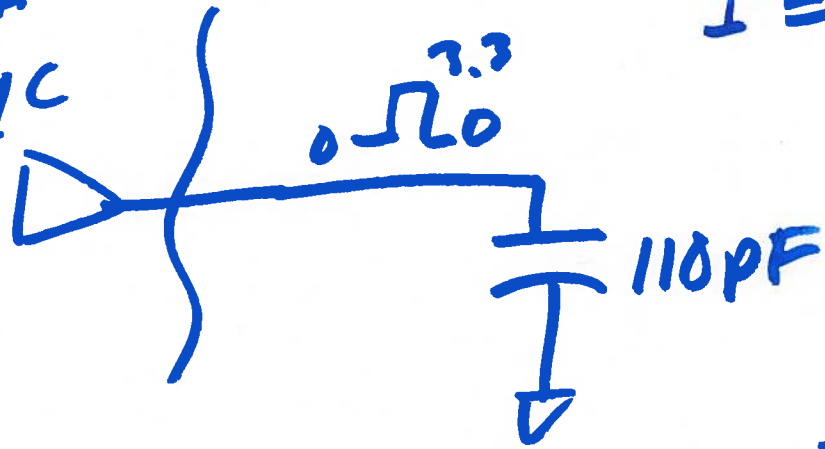


$f = 100 \text{ MHz}$
 $T = 10 \text{ ns}$

144/.6
 48/.6



$\pm 10 \text{ mA}$
 μC



$I = C \frac{dV}{dt}$ edge rates

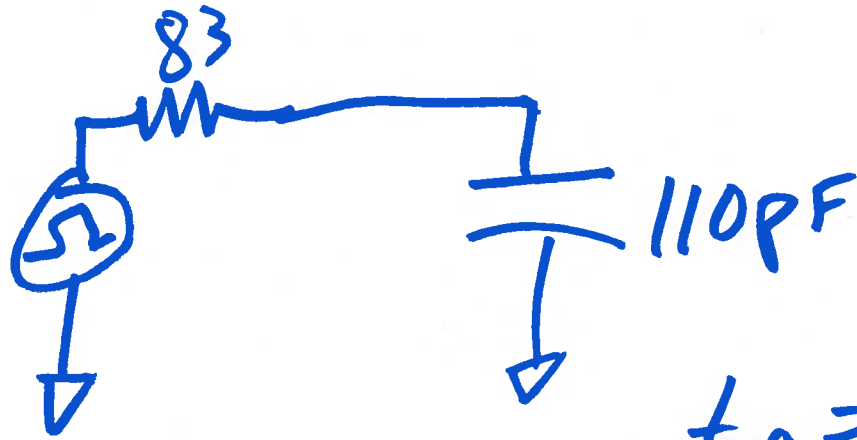
$\frac{I}{C} = \frac{dV}{dt}$

$\frac{-10 \text{ mA}}{110 \text{ pF}} = \frac{9 \text{ V}}{1 \text{ ns}} = \frac{dV}{dt}$

$\frac{3 \text{ V}}{30 \text{ ns}}$

2)

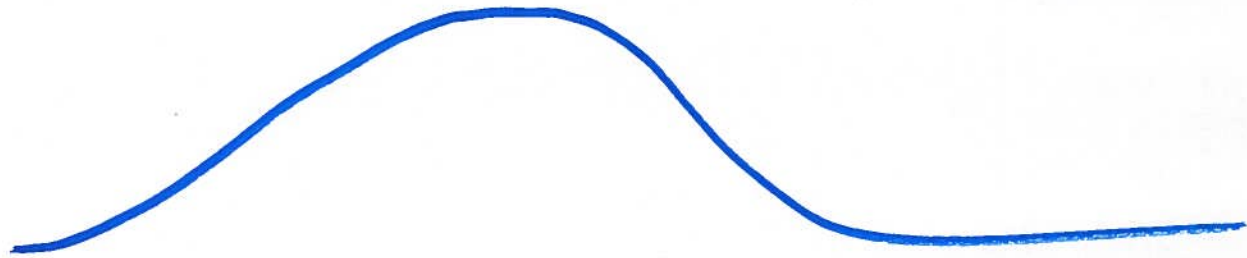
$$R_N = \frac{.6}{144} \cdot 20K = \frac{12K}{144} = \cancel{83} \cdot 83\Omega$$

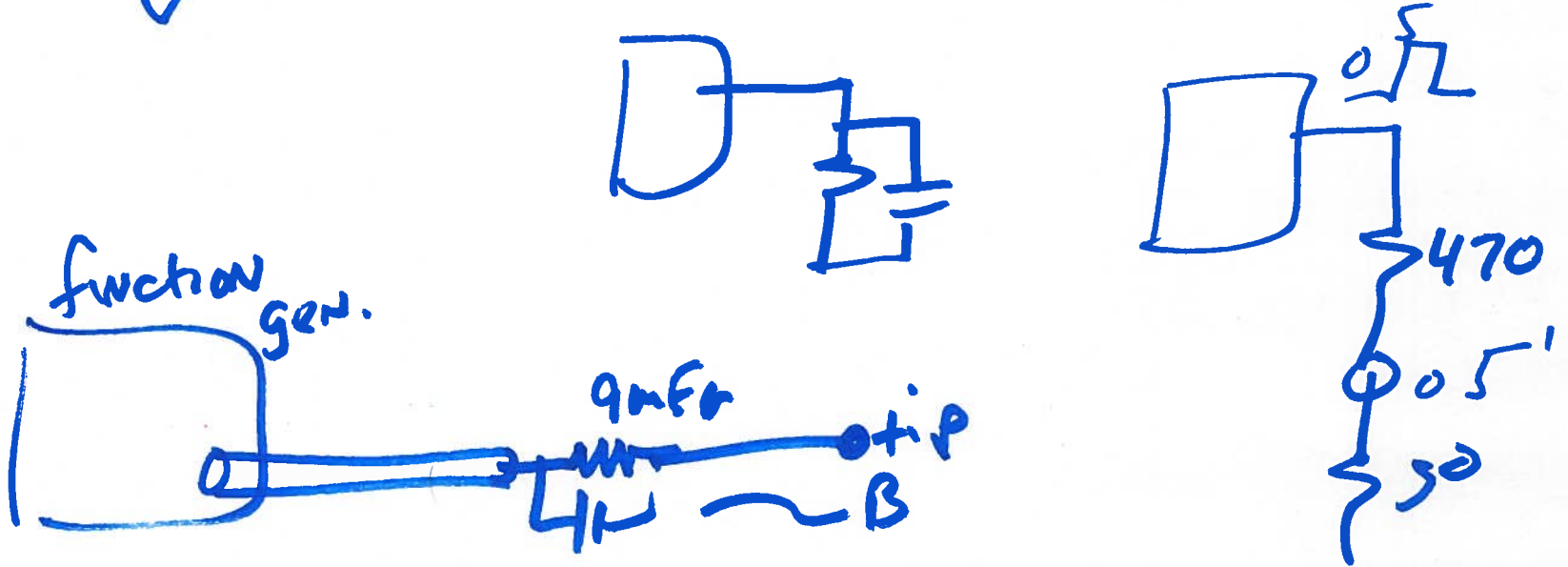
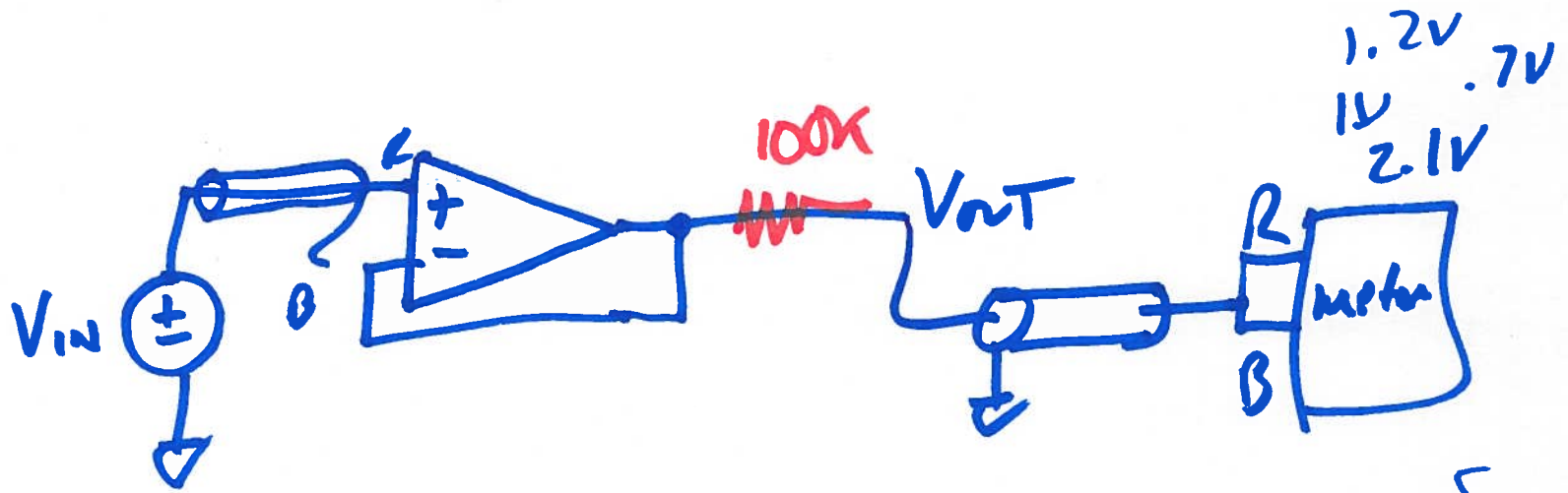


$$\tau \approx 9NS$$

$$t_f = t_r = 2.2\tau$$

$$= \underline{\underline{19.8NS}}$$





4)