

Thu, 29 ~~SEP~~ 2016

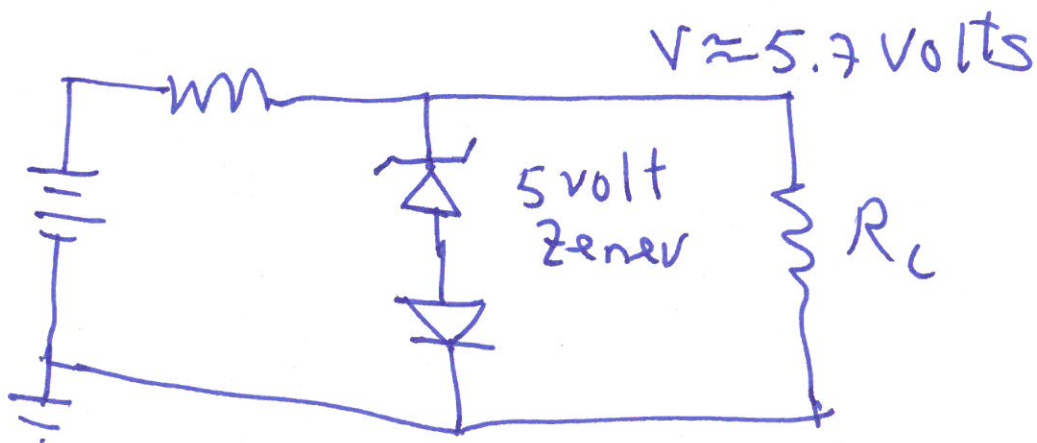
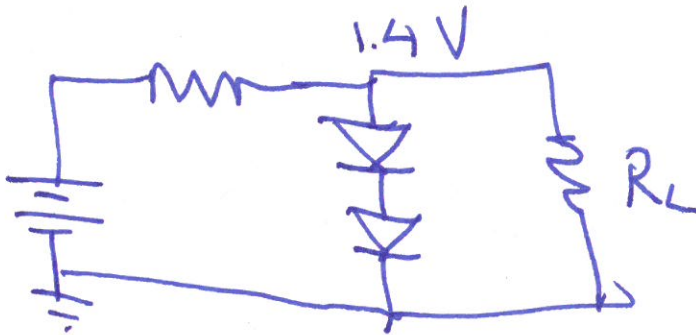
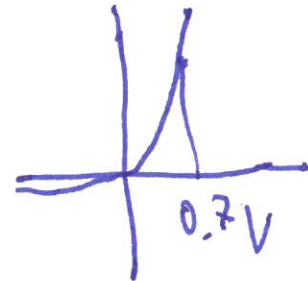
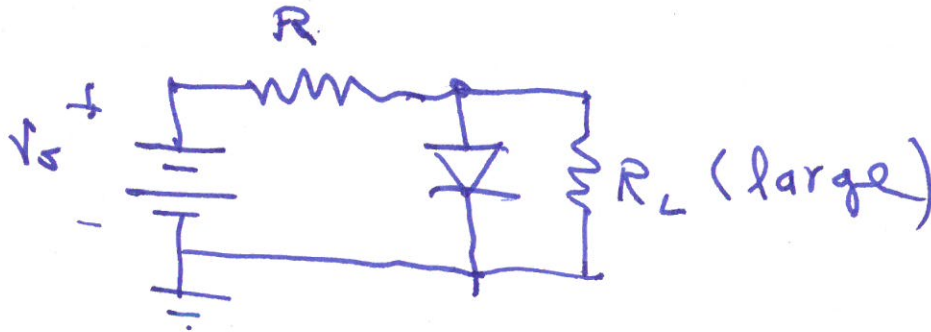
(41)

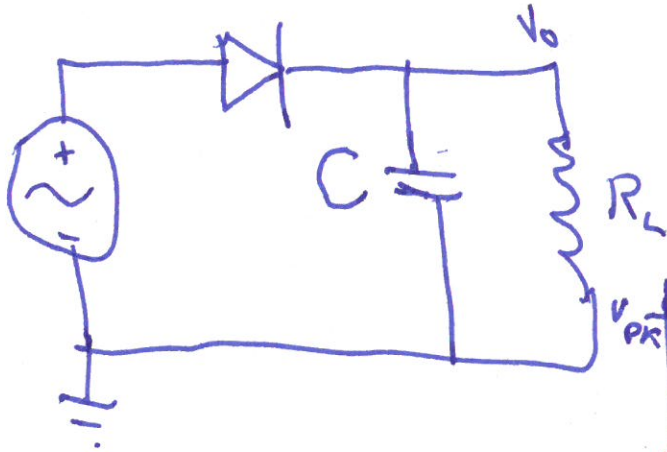
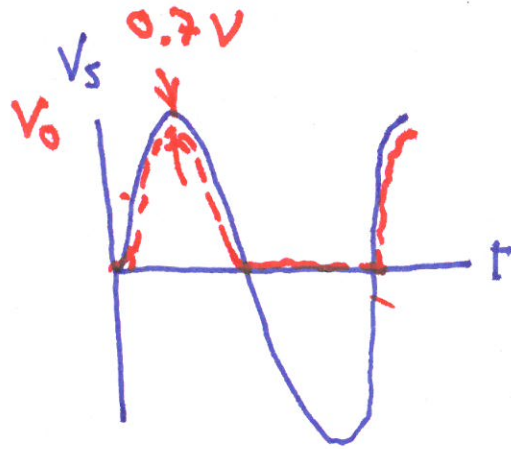
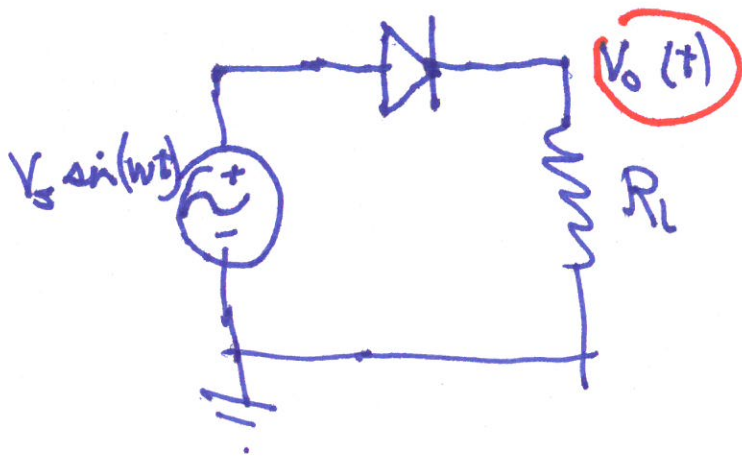
FWD Bias

REV Bias

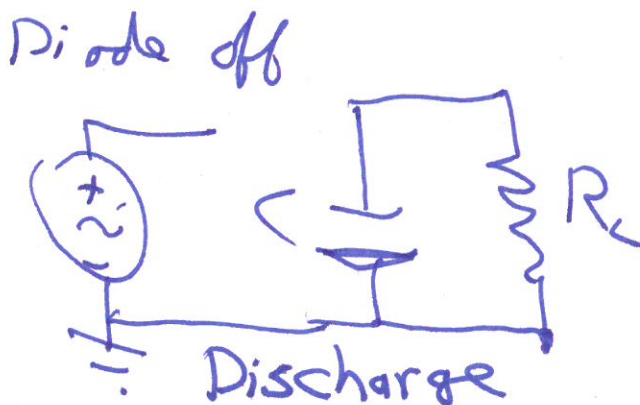
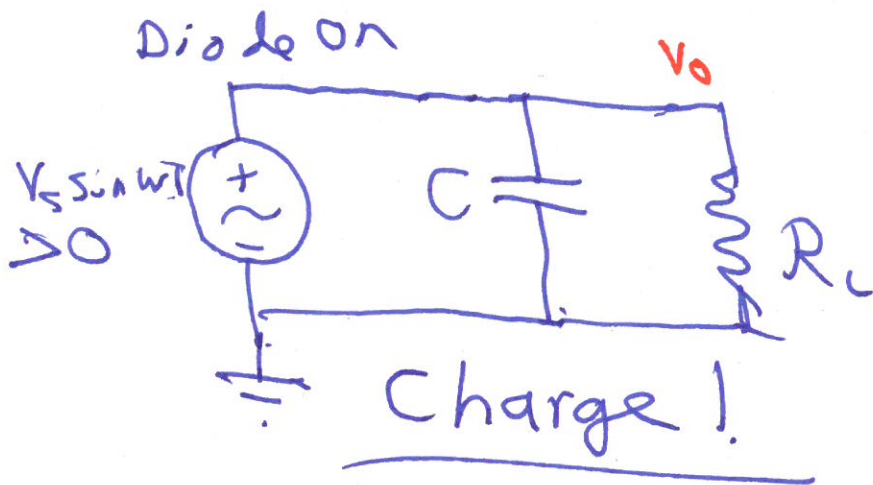
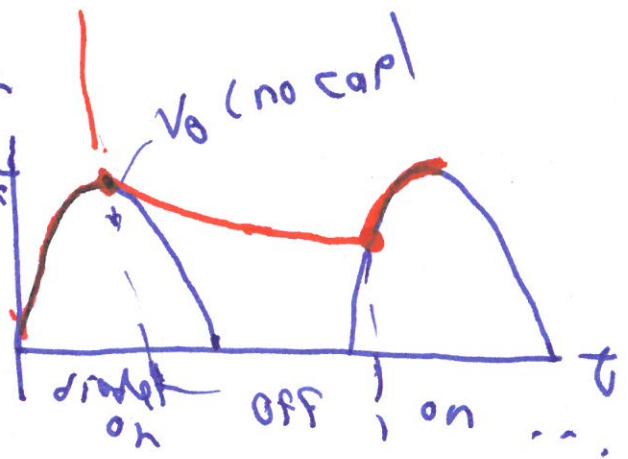
0.7V
(silicon) $\frac{I}{T}$

open circuit





voltage on Diode = 0



$$V_o = V_{pk} e^{-t/R_L C}$$

$$R_L C \gg \frac{1}{60} \text{ sec}$$

$$\max = V_s \quad \min = V_s e^{-t/RC}$$

difference (Ripple)

$$V_s (1 - e^{-t/RC})$$

$$t \approx \frac{1}{f}$$

Example: 1% Ripple

$$= 16 \text{ ms.}$$

$$(1 - e^{-t/RC}) \approx \frac{t}{RC}$$

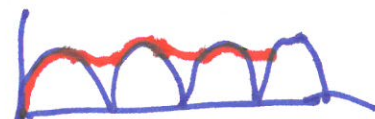
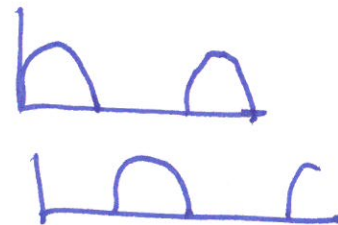
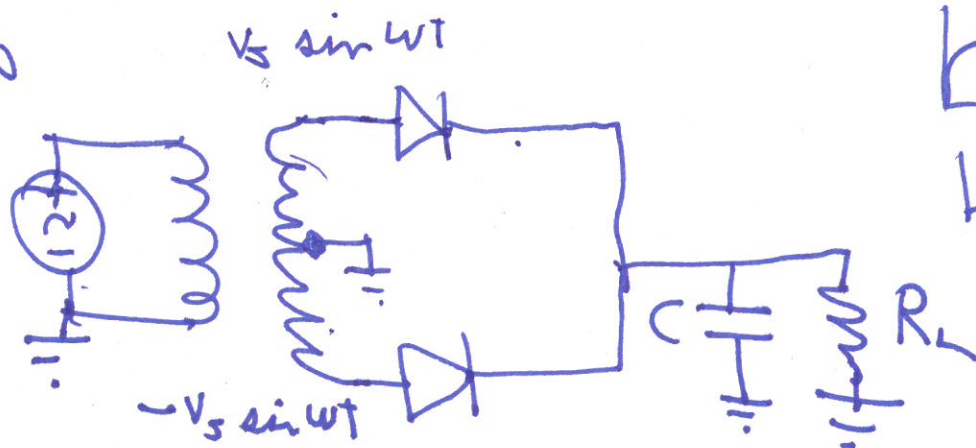
$$(1 - (1 - \frac{t}{RC})) \rightarrow \frac{t}{RC}$$

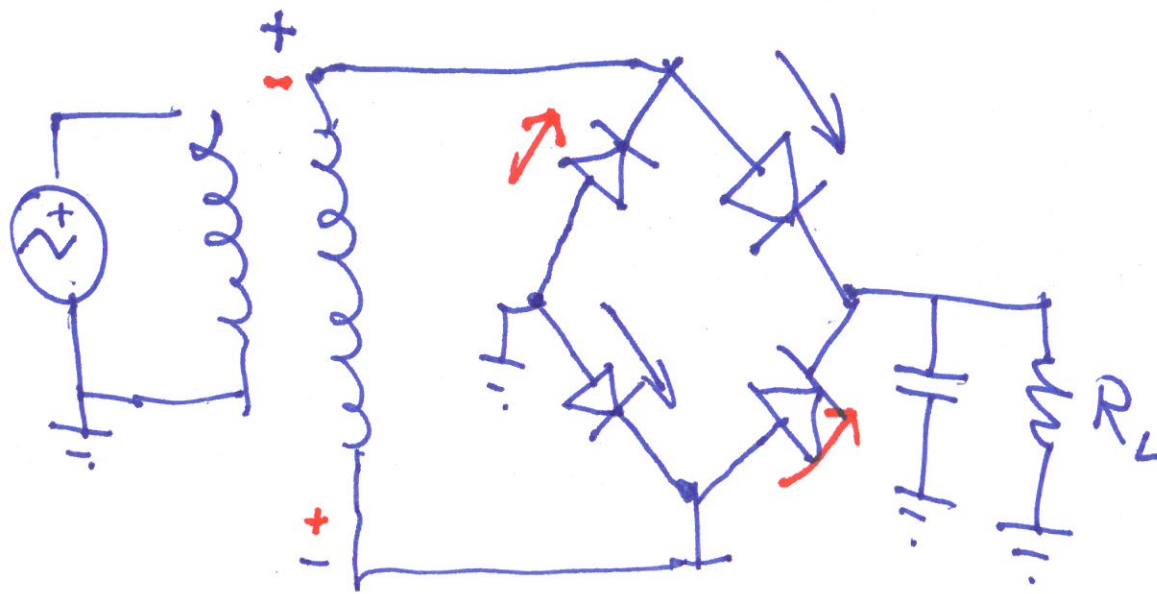
$$C \approx 0.01$$

$$0.01 = \frac{I}{RC}$$

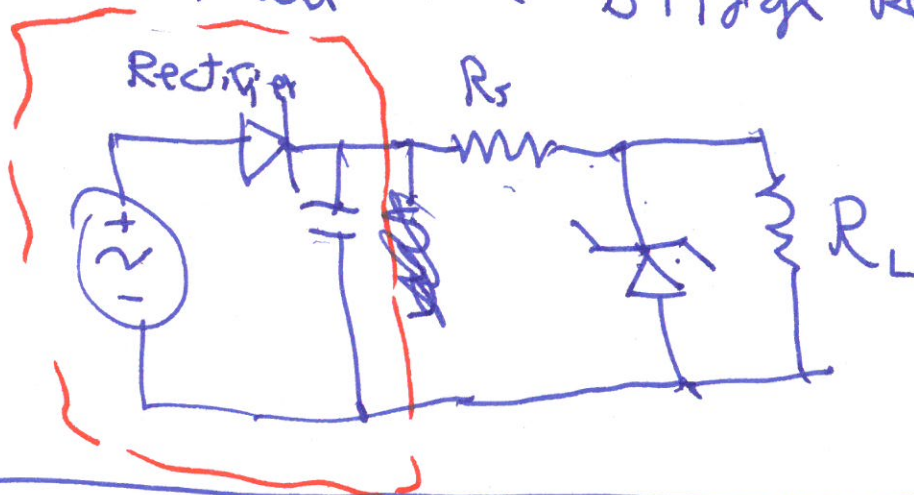
$$C = \frac{1}{f R \times 0.01}$$

Full Wave Rectifier



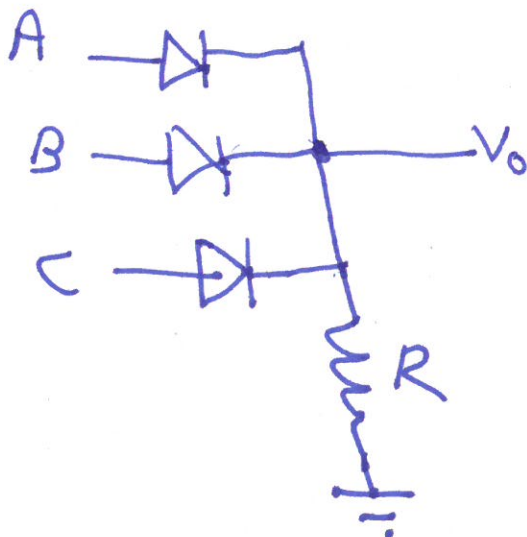


Full-Wave Bridge Rectifier.



Diode Logic

O.R

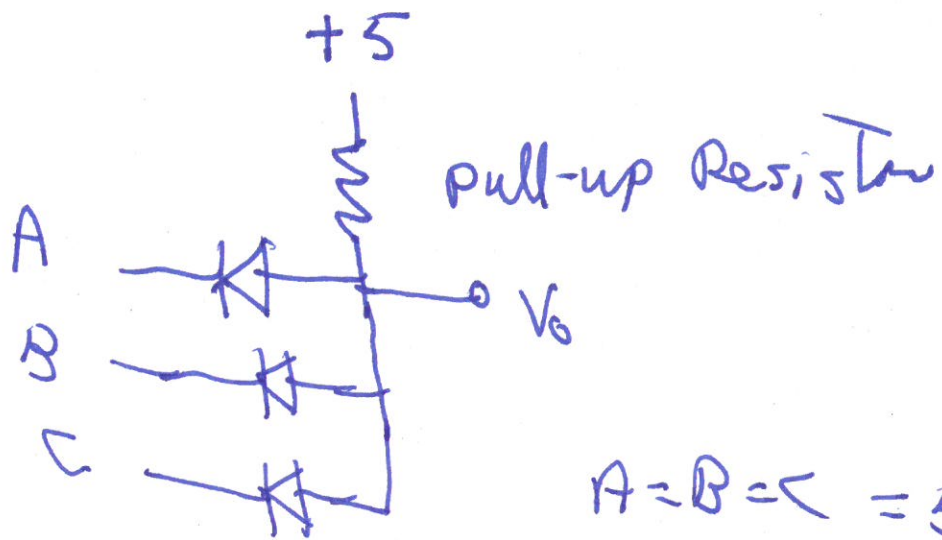


$$V_A = 5 \text{ volts}$$

$$V_B = V_C = 0$$

Diode A is on

$$V_o = 5 \text{ V}$$

And

$$A = B = C = 5V$$

$$V_o = 5V$$

$$A = 0 \text{ volts}$$

$$\text{Diode A is on} \quad V_o = 0$$