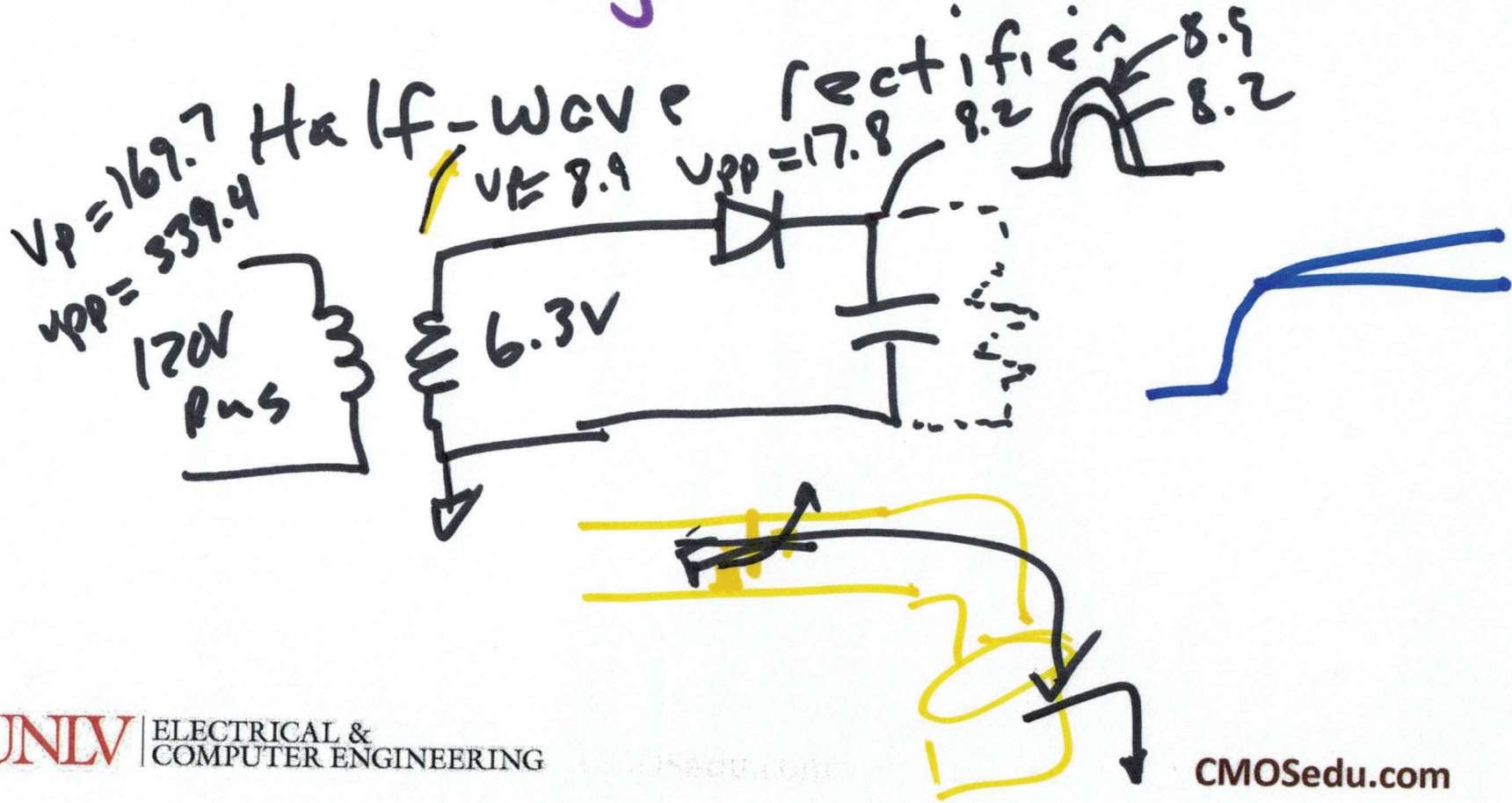


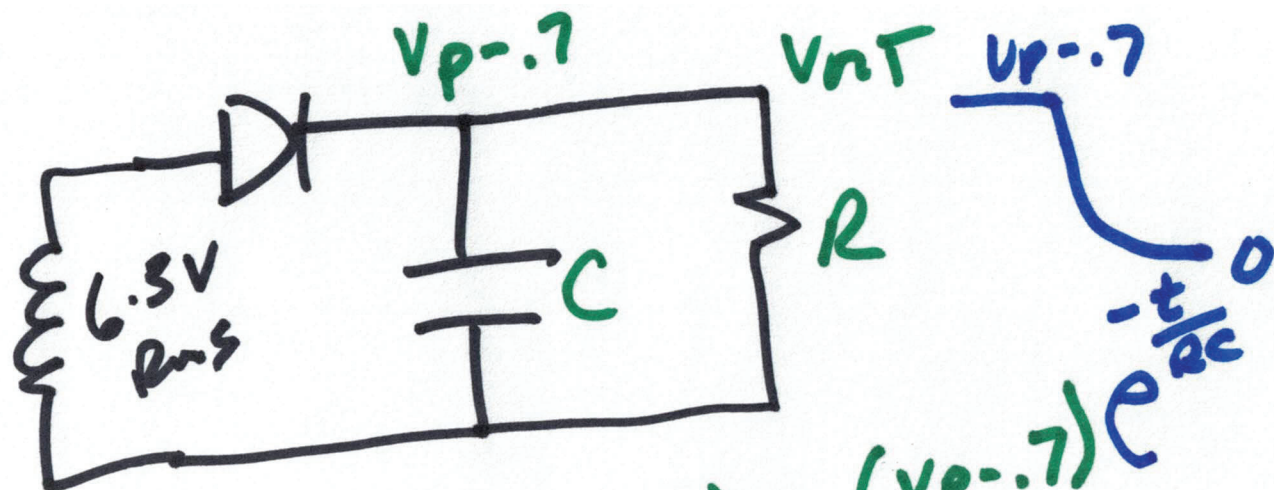
EE 442 / ECG 642

Power Electronics 3

Lecture 1

Aug. 31, 2022





$$\rightarrow V_{nT}(t) = (V_p - .7) e^{-t/RC}$$

$$V_{nT} = 8.2 e^{-\frac{10\mu s}{4ns}} = .67V$$

$$.9 \cdot 8.2 = 8.2 e^{-\frac{t}{RC}}$$

$$-\frac{t}{RC} = \ln .9$$

$$-\frac{t}{RC} = RC \ln(1 - \% \text{ drop})$$

$$\frac{t}{RC} = \frac{1}{f \cdot 2}$$

2)

$$\frac{T}{2} = \frac{1}{f \cdot 2} = -R \cdot C \cdot \ln(1 - \% \text{ drop})$$

\uparrow \uparrow
 60/12 load filter cap

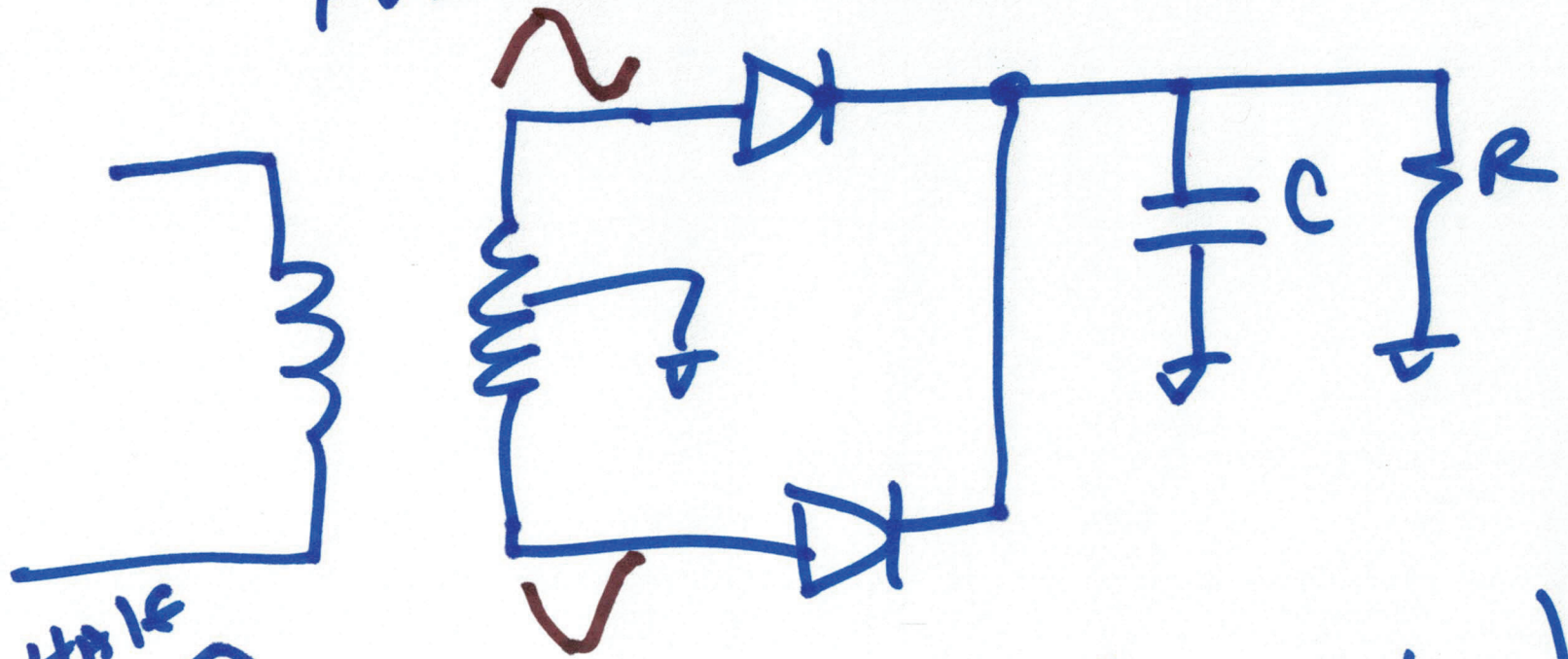
$$\frac{8V}{1A} = R = 8\Omega$$

$$C = \frac{1}{60 \cdot 2 \cdot 8 \cdot \ln .9}$$

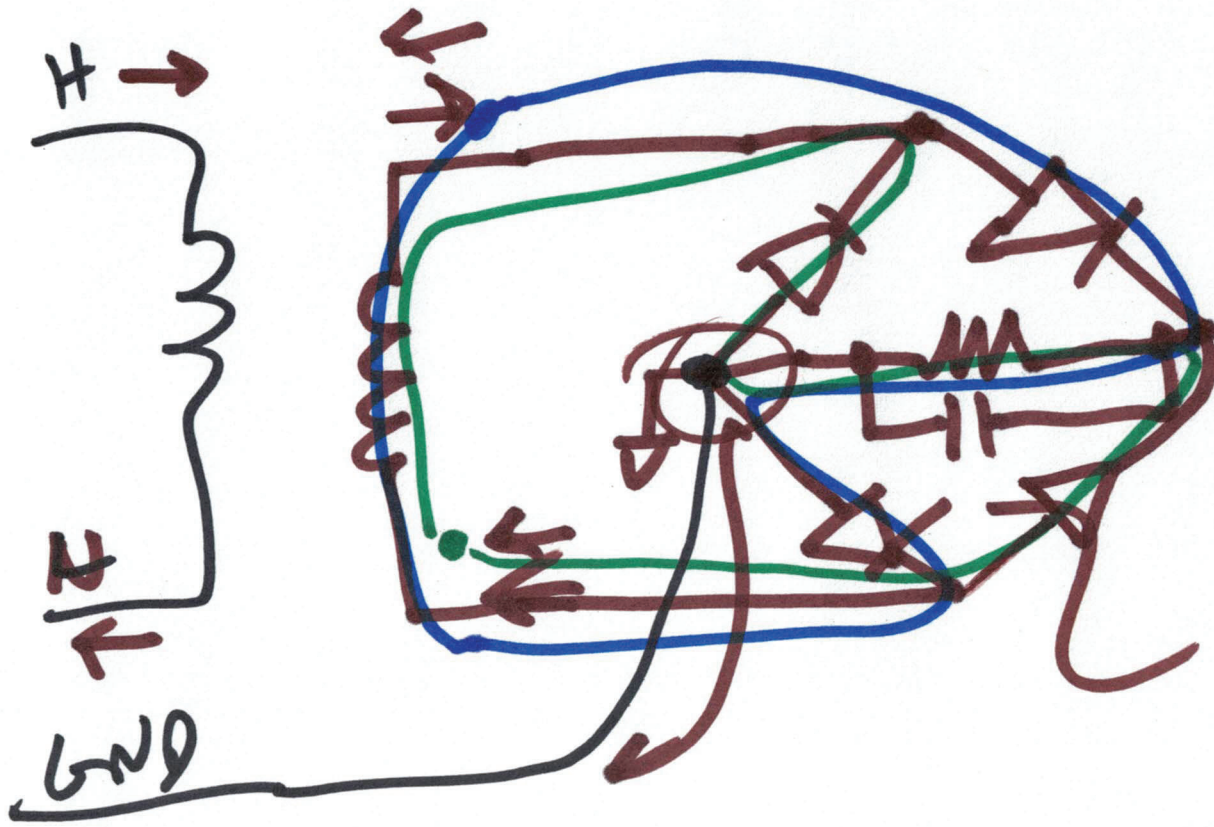
$$C \approx 10 \mu F$$

3)

Full-wave Rectifier



$$\frac{T}{2f} = -RC \cdot \ln(1 - \% \text{ drop})$$
 Change to 4 for full-wave



full-bridge
full-wave

3)