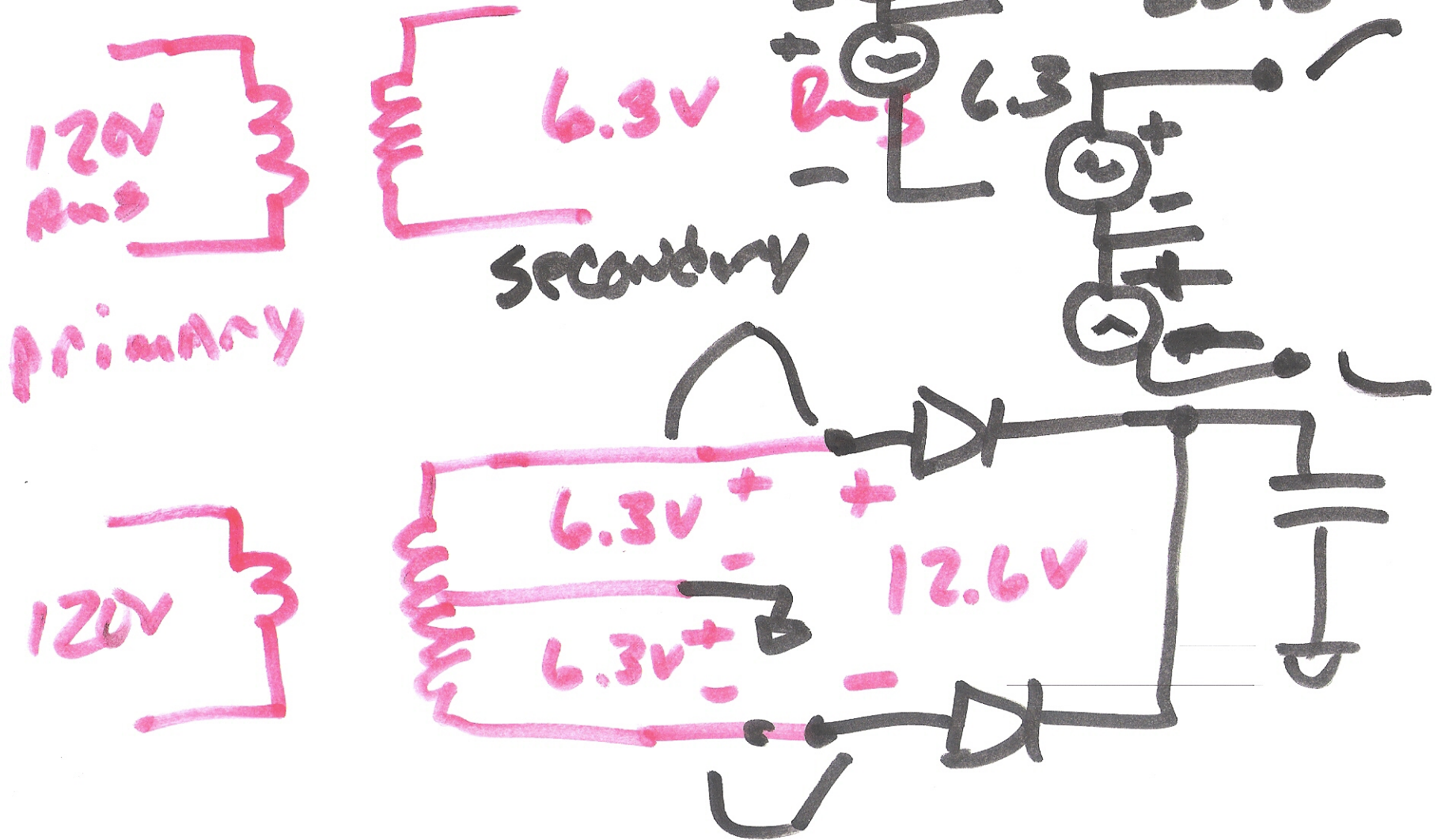


# ECE 51472 Power Electronics

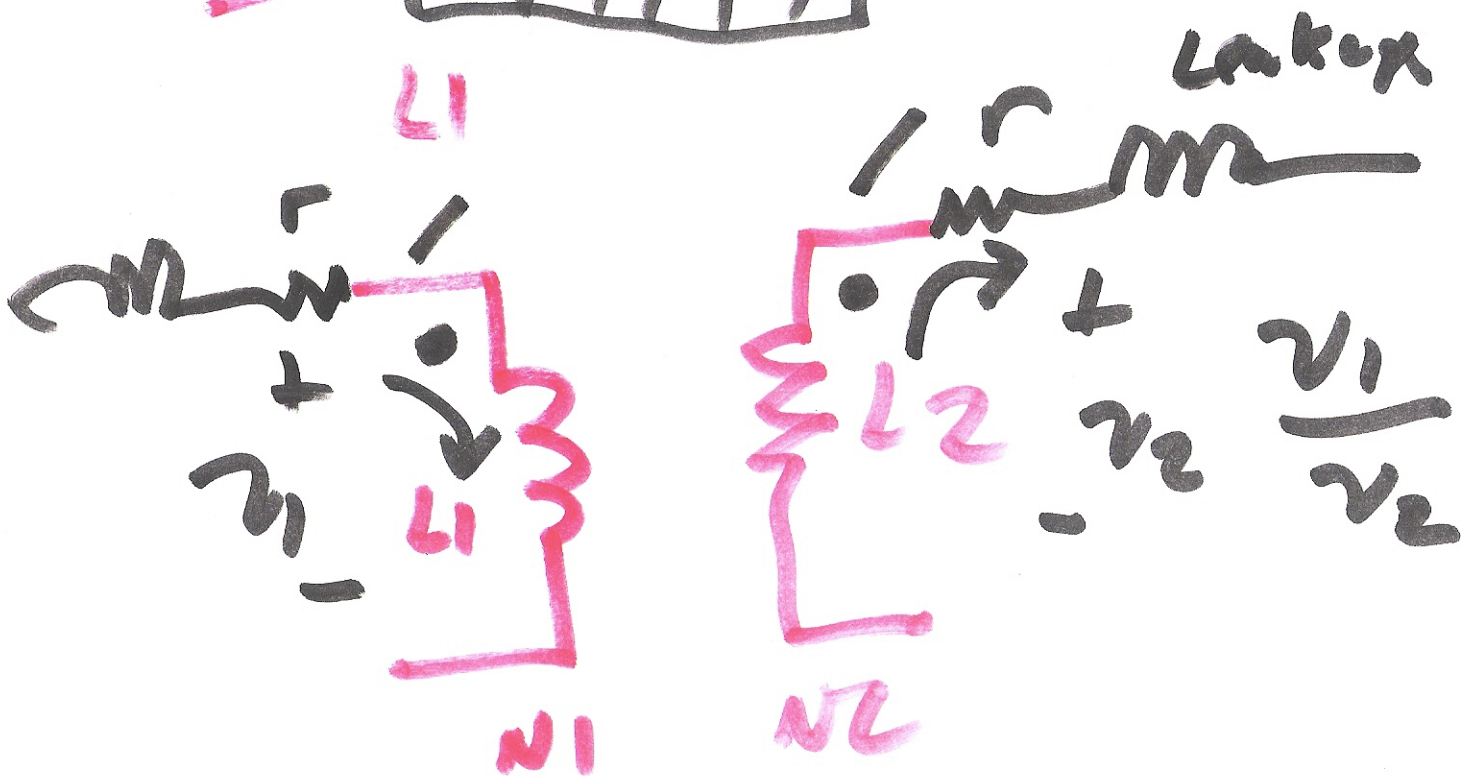
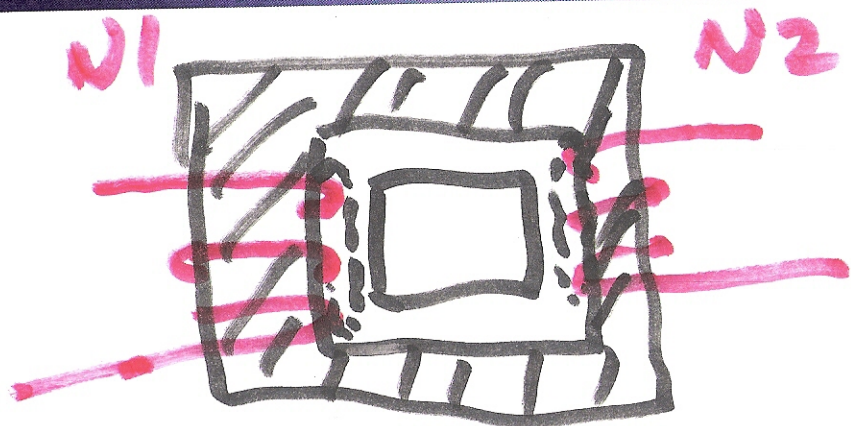
Lecture 32

Nov. 10,  
6.3  
2010



1)

K L1 L2 I



$$\frac{v_1}{v_2} = \frac{N_1}{N_2} = \sqrt{\frac{L_1}{L_2}}$$

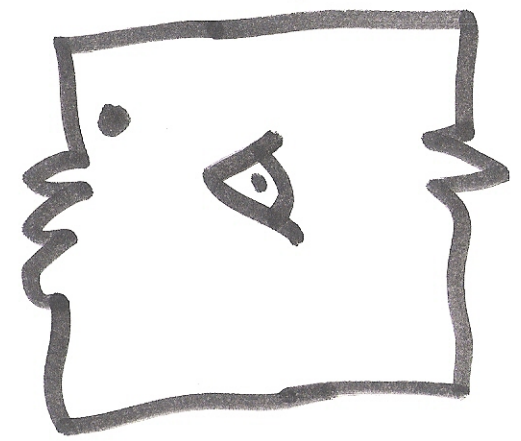
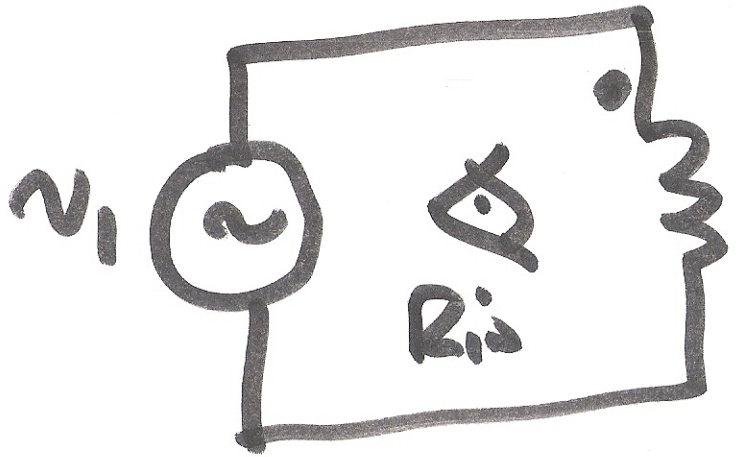
2)



$N_1 \quad N_2$

$i_1 \quad 1 : N$

$i_2$



$$R = \frac{v_2}{i_2}$$

$$\frac{N_1}{N_2} = \frac{1}{2}$$

$$v_1 \cdot N_2 = v_2 \cdot N_1$$

$$\frac{v_1}{i_1} = R_{in}$$

$$v_1 = \frac{v_2}{N} = v_2 \cdot \frac{N_1}{N_2}$$

$$= v_2 \cdot \frac{N_1}{N_2} \cdot \frac{N_1}{N_2} i_1 \cdot N_1$$

$$= i_2 N_2$$

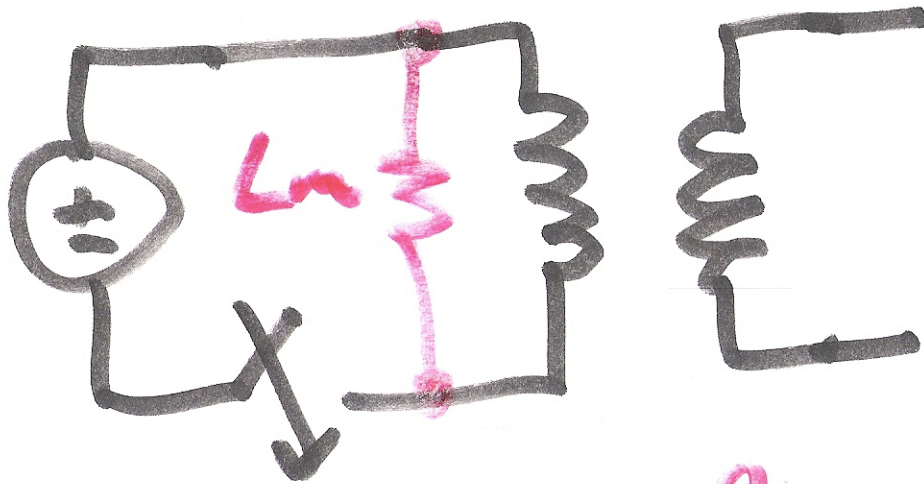
$$= \frac{v_2}{i_2} \cdot \frac{N_1^2}{N_2^2}$$

$$i_1 = i_2 \cdot N = i_2 \cdot \frac{N_2}{N_1}$$

3)

$$R_{in} = R \cdot \left(\frac{N_1}{N_2}\right)^2 = \left(\frac{1}{2}\right)^2 \cdot R$$

1:2

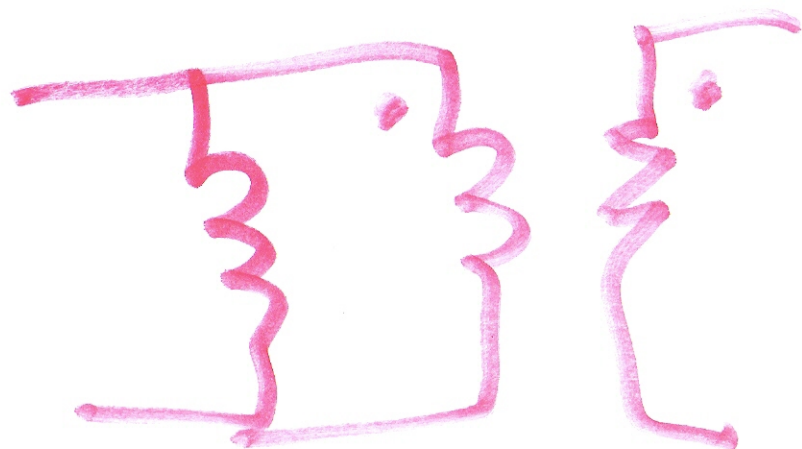
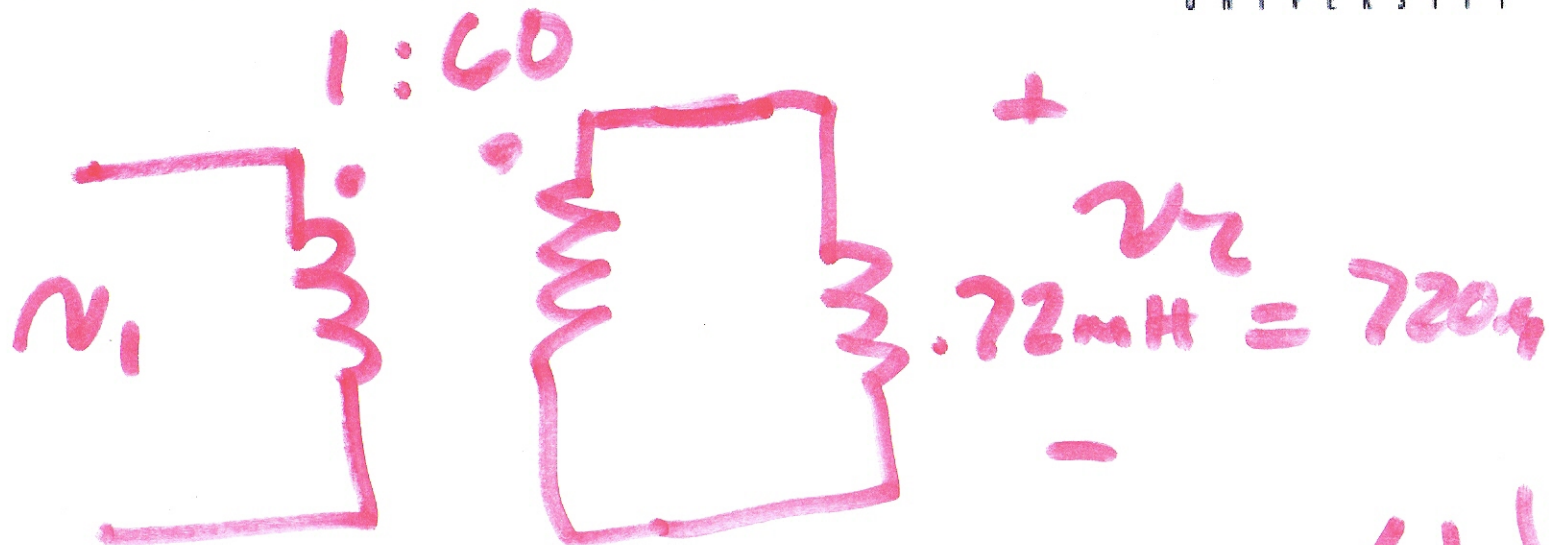


$$\frac{L_{M1}}{L_{M2}} = \left(\frac{N_1}{N_2}\right)^2$$

$$\frac{v_1}{v_2} = \frac{N_1}{N_2} = \frac{1}{60}$$

$$\frac{i_1}{i_2} = \frac{N_2}{N_1}$$

4)



$$L_{m1} = L_{m2} \cdot \left(\frac{1}{N}\right)^2$$

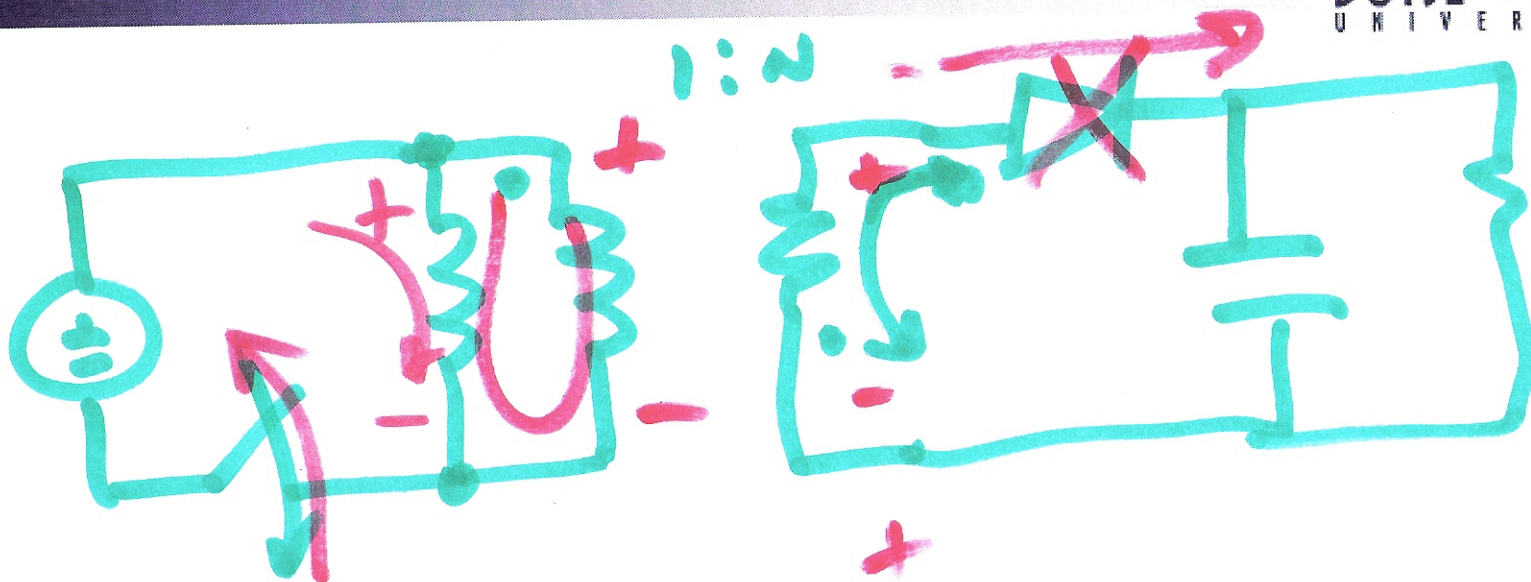
$$= 720\mu\text{H} \cdot \left(\frac{1}{60}\right)^2$$

$$= 0.2\mu\text{H}$$

5)



# Flyback Converter



6)