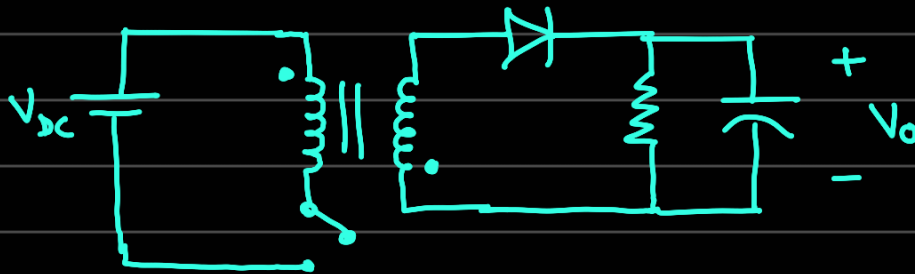
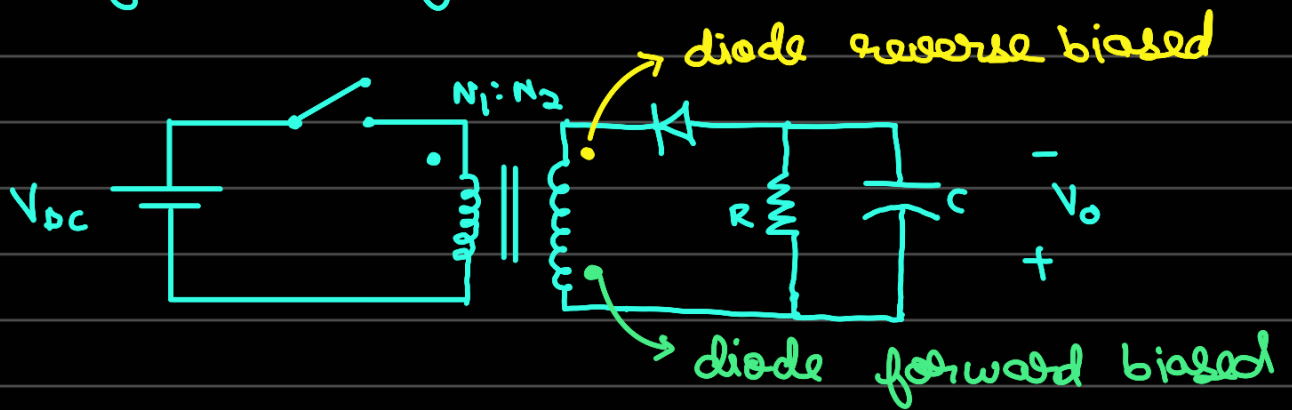
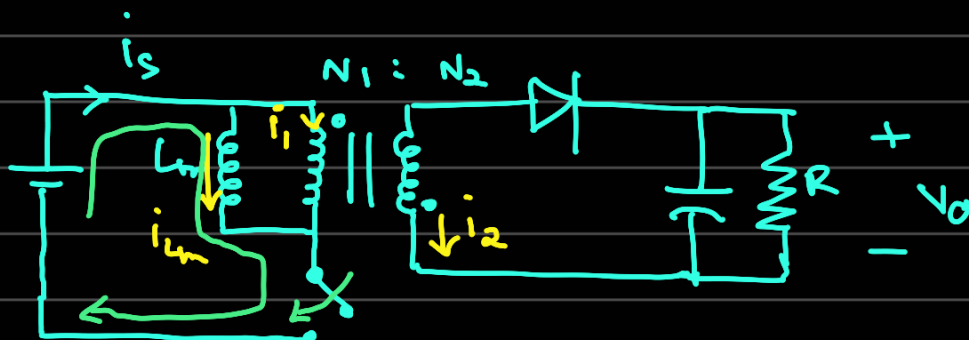
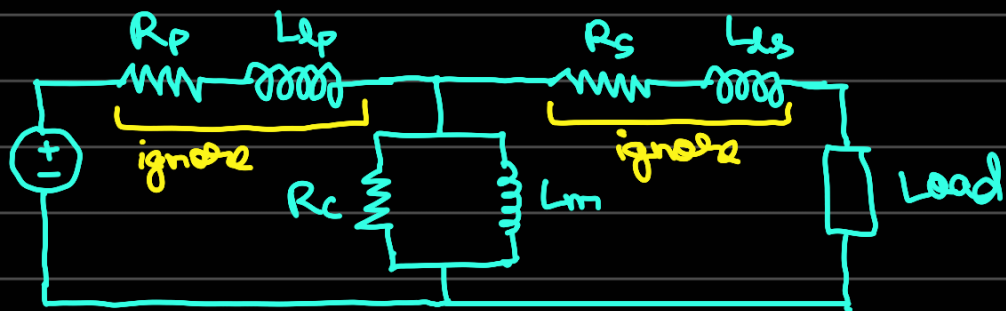


Day-18

→ Using a transformer?!

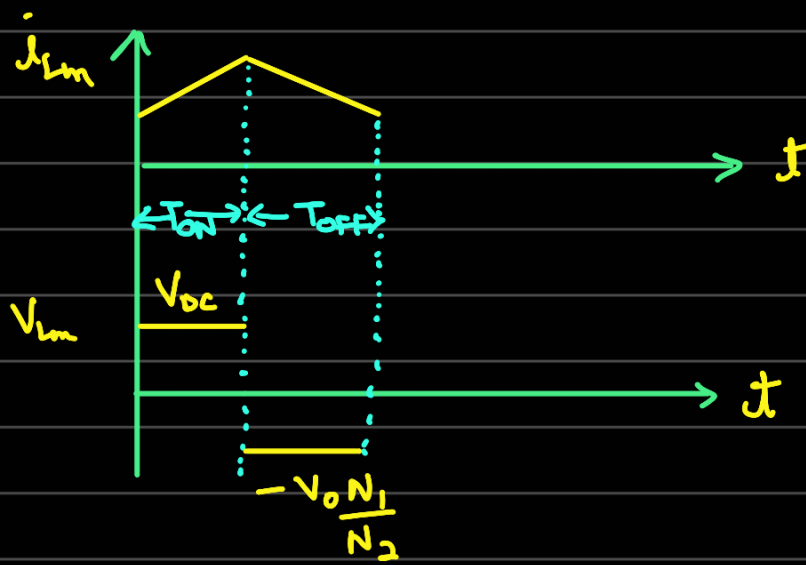


→ Transformer equivalent circuit:

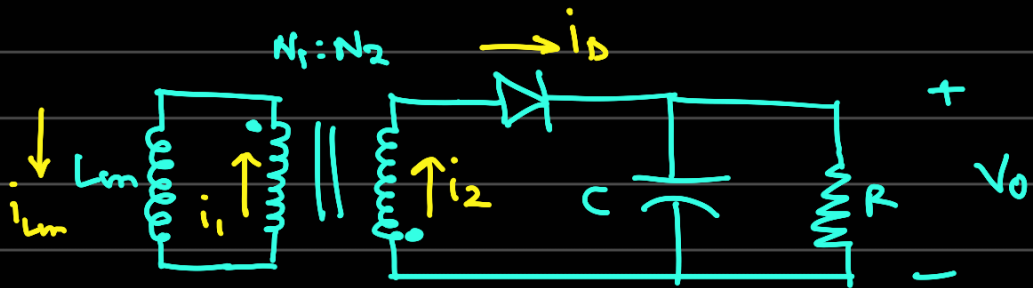


Flyback converter

When switch is ON, $i_2 = 0 \Rightarrow i_1 = 0 \Rightarrow i_s = i_{Lm}$
and C feeds R



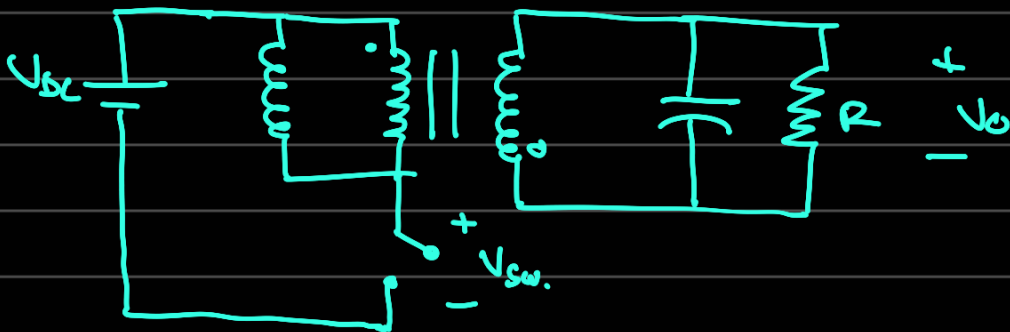
OFF State



$$i_o = i_2 = \frac{N_1 i_1}{N_2} = \frac{N_1 i_{Lm}}{N_2}$$

$$V_{sec} = -\frac{N_2}{N_1} V_{prim} = -\frac{N_2}{N_1} L_m \frac{di_{Lm}}{dt}$$

$$\text{But } V_O = V_{sec} = -\frac{N_2}{N_1} L_m \frac{di_{Lm}}{dt}$$



$$V_{sw} = V_{OC} - L_m \frac{di_{Lm}}{dt} = V_{OC} + \frac{N_1}{N_2} V_O$$

$$V_{OC}(DT) = V_O \frac{N_1}{N_2} (1-D) T \Rightarrow \frac{V_O}{V_{OC}} = \frac{N_2}{N_1} \frac{D}{1-D}$$