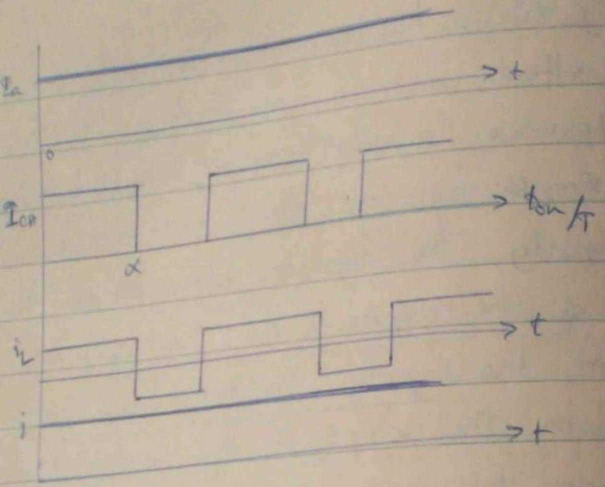
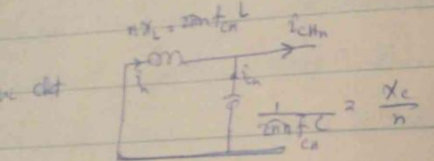




The n^{th} harmonic current in the supply is

$$\boxed{I_n = \frac{X_c/n}{(n X_L) - (X_c/n)} I_{CH_n}} \quad (55)$$

$$\boxed{X_L = 2\pi f_{CH} L} \quad , \quad \boxed{X_c = \frac{1}{2\pi f_{CH} C}} \quad (56) \& (57)$$

n = order of harmonic

From eq^n (55) (56) & (57)

$$I_n = \frac{1}{4\pi^2 n^2 f_{CH}^2 LC - 1} I_{CH_n}$$

$$\boxed{I_n = \frac{1}{\left(n\frac{f_{CH}}{f_r}\right)^2 - 1} I_{CH_n}} \quad \text{------ } (58)$$

where I_n = rms n^{th} term of the supply crt.

I_{CH_n} = " " chopper.

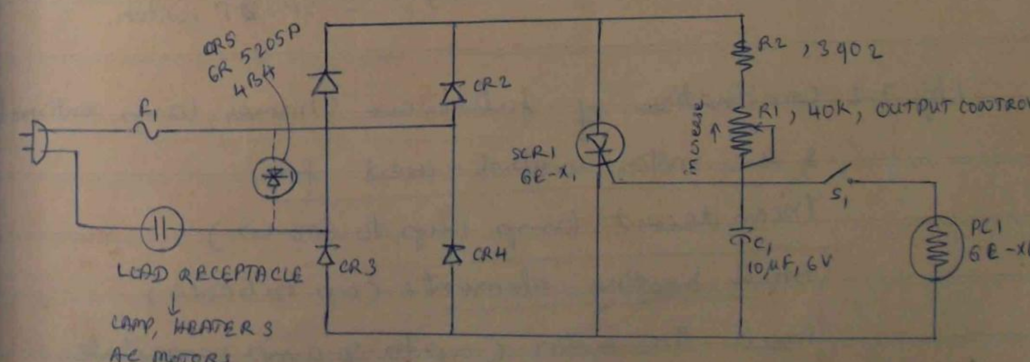
f_{CH} = chopper frequency

f_r = resonant frequency of L & C

$$\boxed{f_r = \frac{1}{2\pi\sqrt{LC}}}$$

These two frequencies f_{CH} & f_r should be different, otherwise resonance occurs, resulting in large voltage oscillation of supply voltage. Normally f_{CH} is 2 or 3 times f_r to avoid this resonance phenomena. This supply harmonic current is thus approximately given by

$$\boxed{I_n \simeq \left(\frac{f_r}{n f_{CH}}\right)^2 I_{CH_n}} \quad \text{------ } (59)$$



Fullwave Timer, Lampsentimal
Timer lamp ... AC motor control