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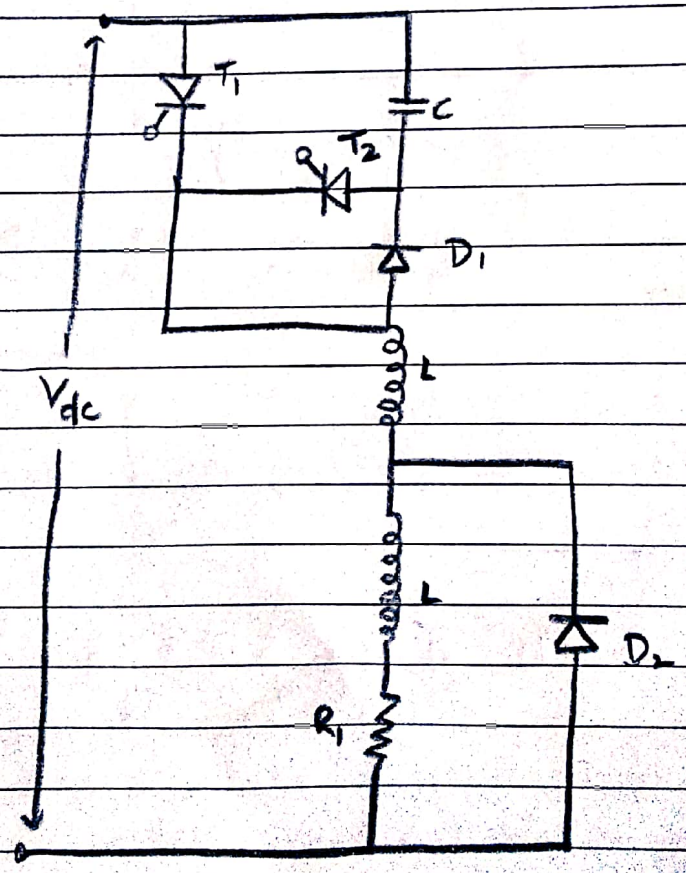
Que:07 Mention the advantages of Jones Chopper over other chopper circuits.

Ans: Jones chopper is an example of class D commutation in which charged capacitor is switched by an auxiliary SCR to commutate the main SCR. In this circuit SCR_1 is the main switch & SCR_2 is the auxiliary switch which is lower capacity than SCR_1 & is used to commutate SCR_1 by a reverse voltage developed across the capacitor C.



Advantages :

* It allows the use of higher voltage and lower microfarad commutating capacitors. This is because the trapped energy of inductor L_2 can be forced in to the commutating capacitor rather than simply charging the capacitor by supply voltage.

* In this circuit there is no starting problem & anyone of the SCR can be turned on initialy there is great flexibility in control also.

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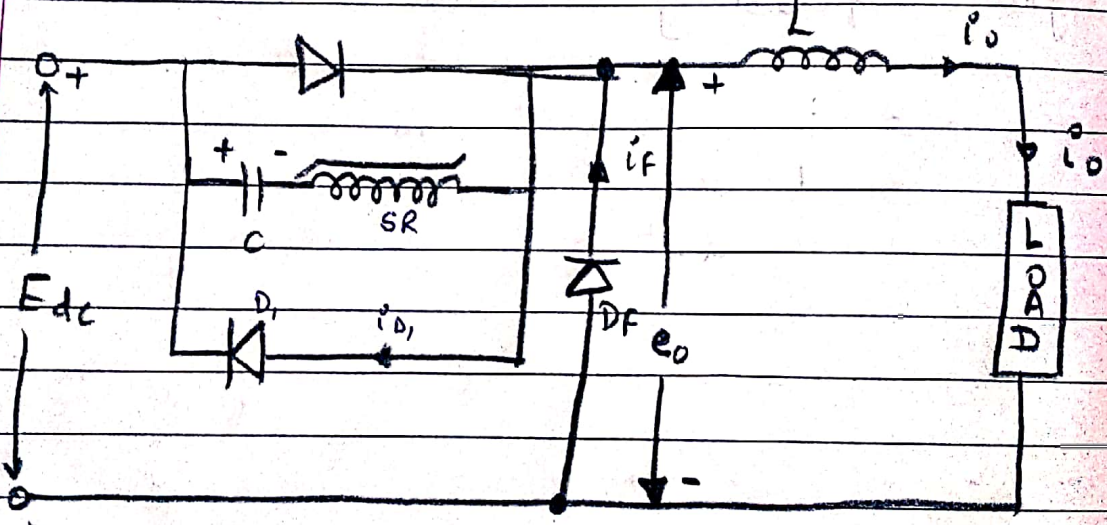
Que:08 Describe Morgan chopper with associated voltage & current waveforms.

Ans: Figure shows the power-circuit of Morgan chopper. In this circuit, T_1 is the main thyristor, whereas capacitor C, saturable reactor SR and diode D_1 forms the commutating circuit. The exciting current of the saturable reactor is assumed to be negligible small. When the saturable reactor is saturated it has very low inductance.



when the SCR T_1 is OFF, capacitor C will charge to the supply voltage Edc with the polarity as shown in figure. And the saturable reactor is placed in the positive saturation condition. The capacitor charging path is

$E_{dc+} - C - SR - Load - E_{dc-}$

Thyristor T_1 is triggered at time $t = t_1$. when thyristor T_1 is turned on, the capacitor voltage appears across the saturable reactor & the core flux is driven from the positive saturation towards negative saturation.