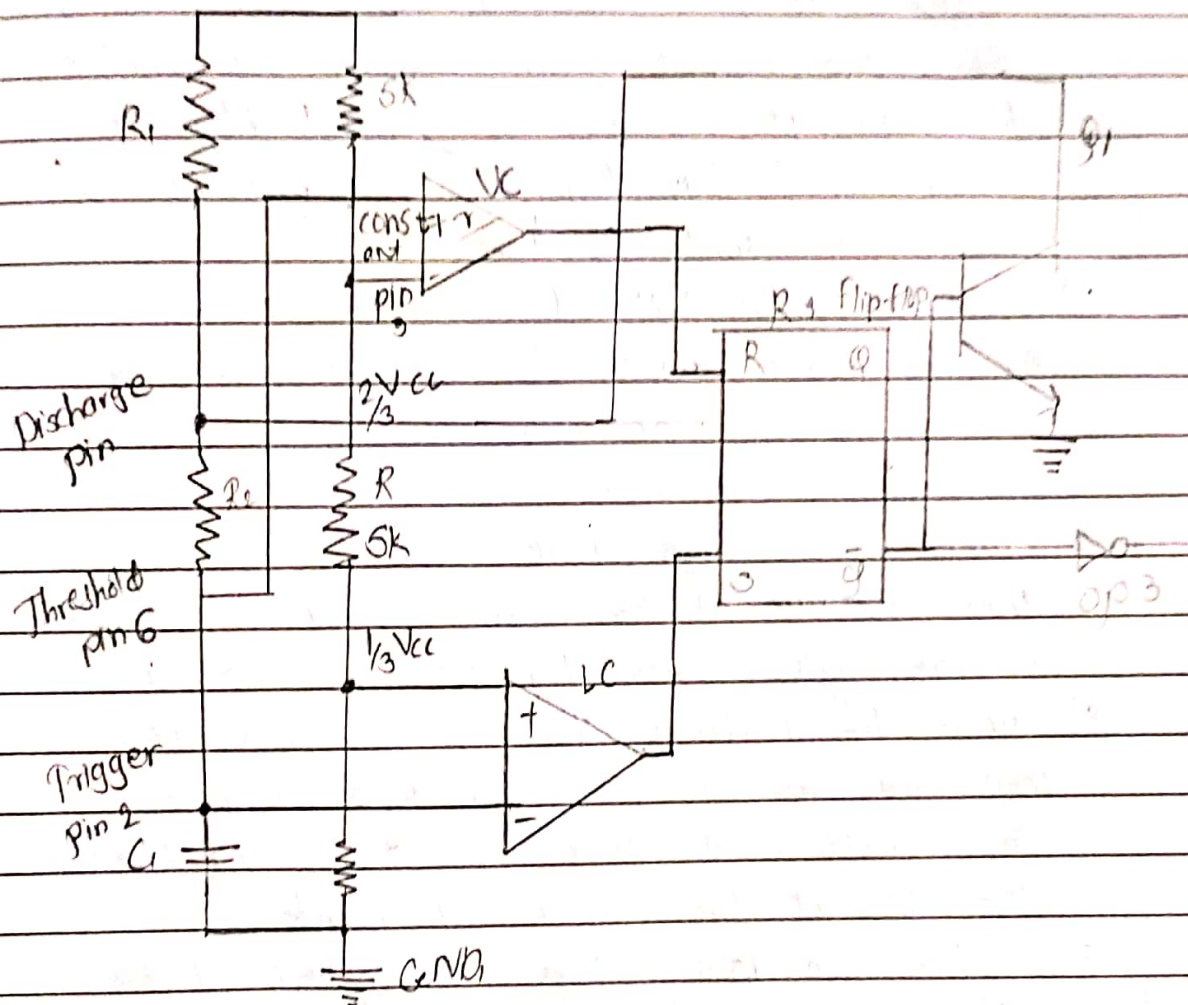


Q2 Explain working of 555 as an Astable multivibrator with the help of a neat circuit diagram. Draw waveforms & state the formula for frequency.

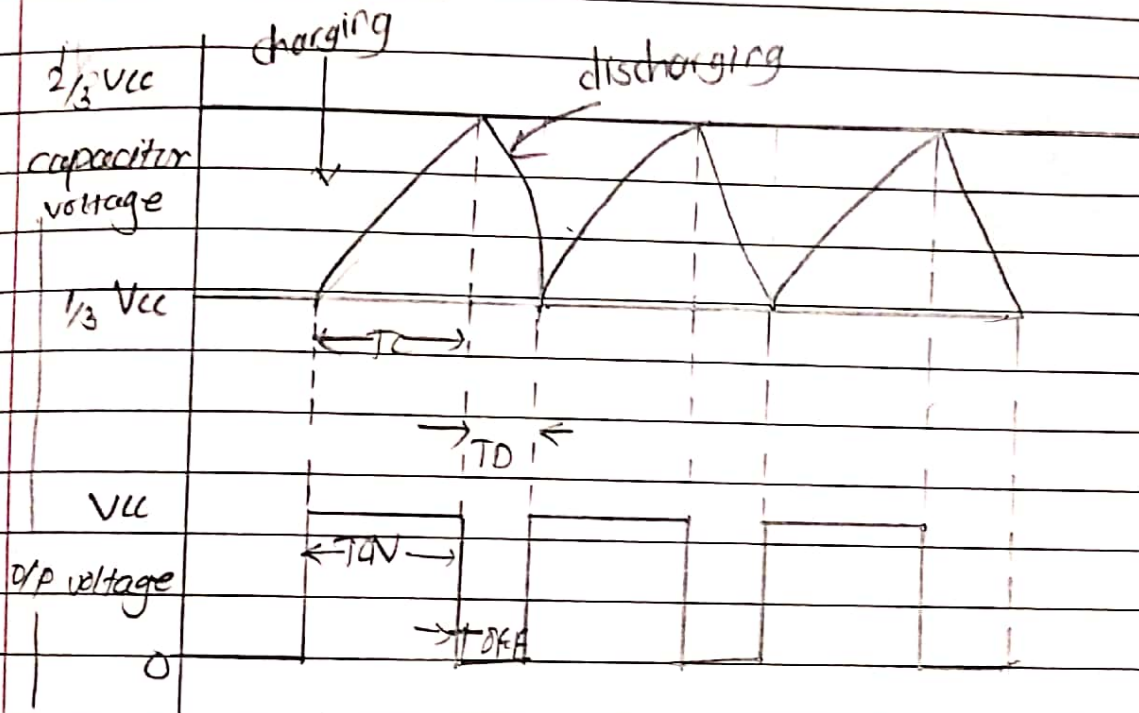


Working of Astable Multivibrator

- 1) When the power is turned on consider the Flip flop is cleared initially, then the o/p of the inverter will be high.
- 2) The charging of the capacitor will be ~~also~~ done using two resistors R_1 & R_2 . When the voltage of the capacitor goes above $2/3 V_{CC}$, then the output of the higher comparator will be high it changes the control Flip-flop. So the, control flip-flops Q o/p will be a low & Q/s will be high.
- 3) So the final o/p of the Inverter is LOW. At the same time the Q1 transistor switches ON & the C1 capacitor starts discharging through resistor R_2 .
- 4) When the voltage of the capacitor is $< 1/3 V_{CC}$, then the o/p of the lower ~~compar~~ comparator, will be high & control flip flop gets is set to 1.
- 5) When the discharge transistor Q1 gets off, then the capacitor gets charged & continuous this process. According to states of the o/p, the LED at the output will blink.
- 6) When the low voltage is applied at the 4th pin (reset-pin) of the IC then it resets the IC. When the low signal is applied to the base of the Q2 transistor then it switches ON by the capacitor,

7) Transistor Q_1 becomes off & again charging C_1 starts charging.

The discharging & charging of capacitor continues & a rectangular oscillating o/p wave form is generated.



$$\text{o/p frequency } f = \frac{1.44}{(R_1 + 2R_2)C} \text{ Hz.}$$