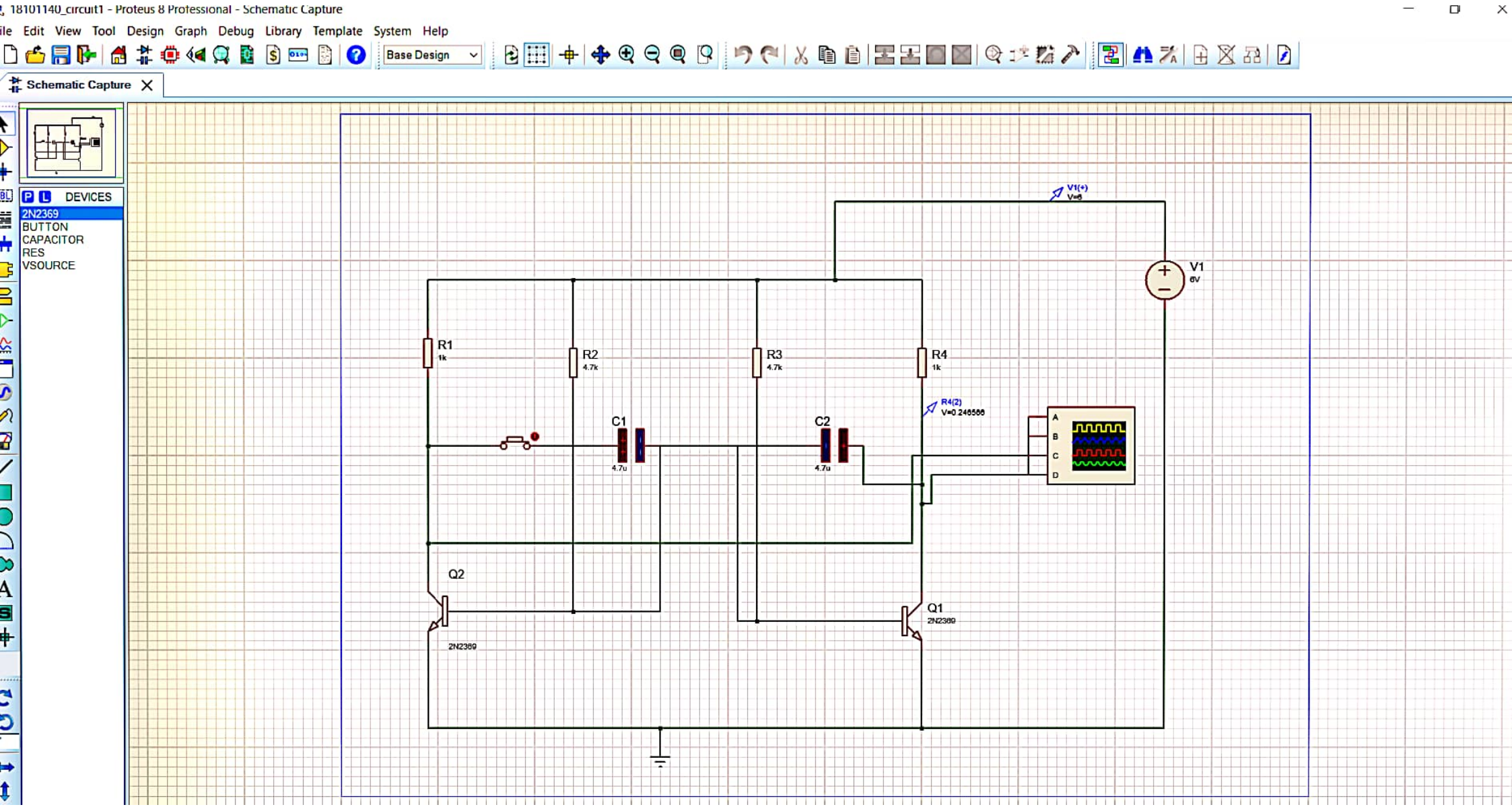

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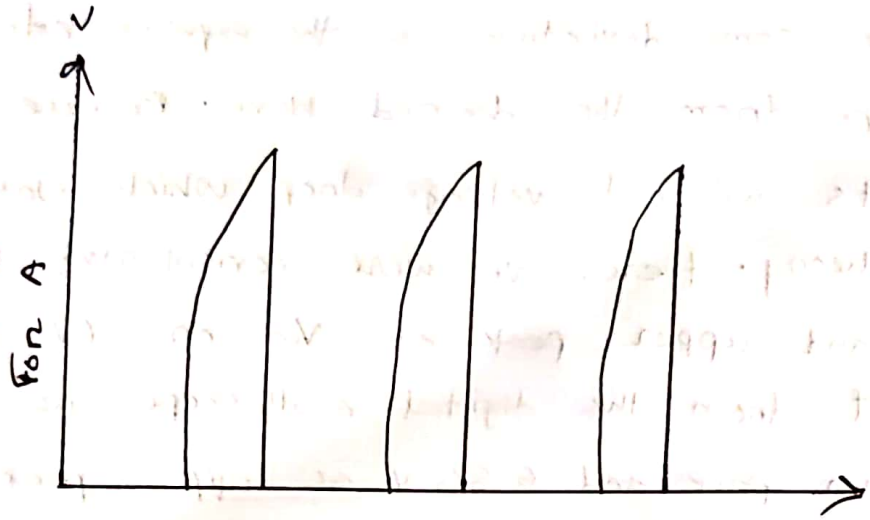
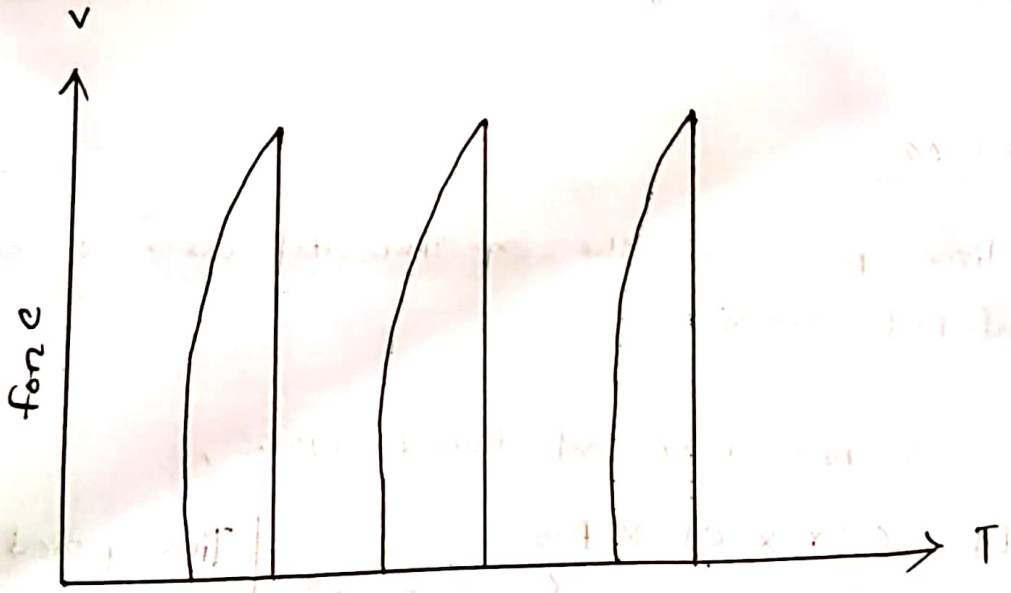
Answer 01





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Answer 02 :-

There are some deviation in the experimental output wave shape from the desired wave. Because of the the circuit's internal voltage drop which was not considered in the theory. Here, we were considering lower peak as 0v and upper peak as Vcc or 6v. But, in the experiment from the digital oscilloscope we got 0.25 v as lower peak and 5.85 v as upper peak. Due to system loss and internal hidden resistance CT becomes higher than theory which will result in flatter curve.

Answer 03

The time period of the experimental wave is similar to the calculated wave.

For theoretical or calculated wave,

$t_1 = 0.69 \times C1 \times R3$

$= 0.69 \times 4.2 \times 10^{-6} \times 4.7 \times 10^3$

$= 15.242$ ms

$t_2 = 0.69 \times C2 \times RL$

$= 0.69 \times 4.7 \times 10^{-6} \times 4.7 \times 10^3$

$= 15.242$ ms

Time period,

$CT = t_1 + t_2$

$= 30.484$ ms

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from Proteus,

We got Time period, $T_p = 30.52$ ms

∴ We can say that the time period of experimental wave are calculated wave is almost the same.

Answer 04

It can be possiable to use the above multivibrator to create variable frequency square wave if we use variable resistor on a variable capacitor. The frequency of a square wave is dependent on the time period. In the multivibrator t_1 and t_2 both depends on the resistor and capacitor on the circuit. By this way, we can create frequency square wave.

Answer 05

We can change it by changing the value of the resistances on capacitors.