CSE350

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Sec: 07

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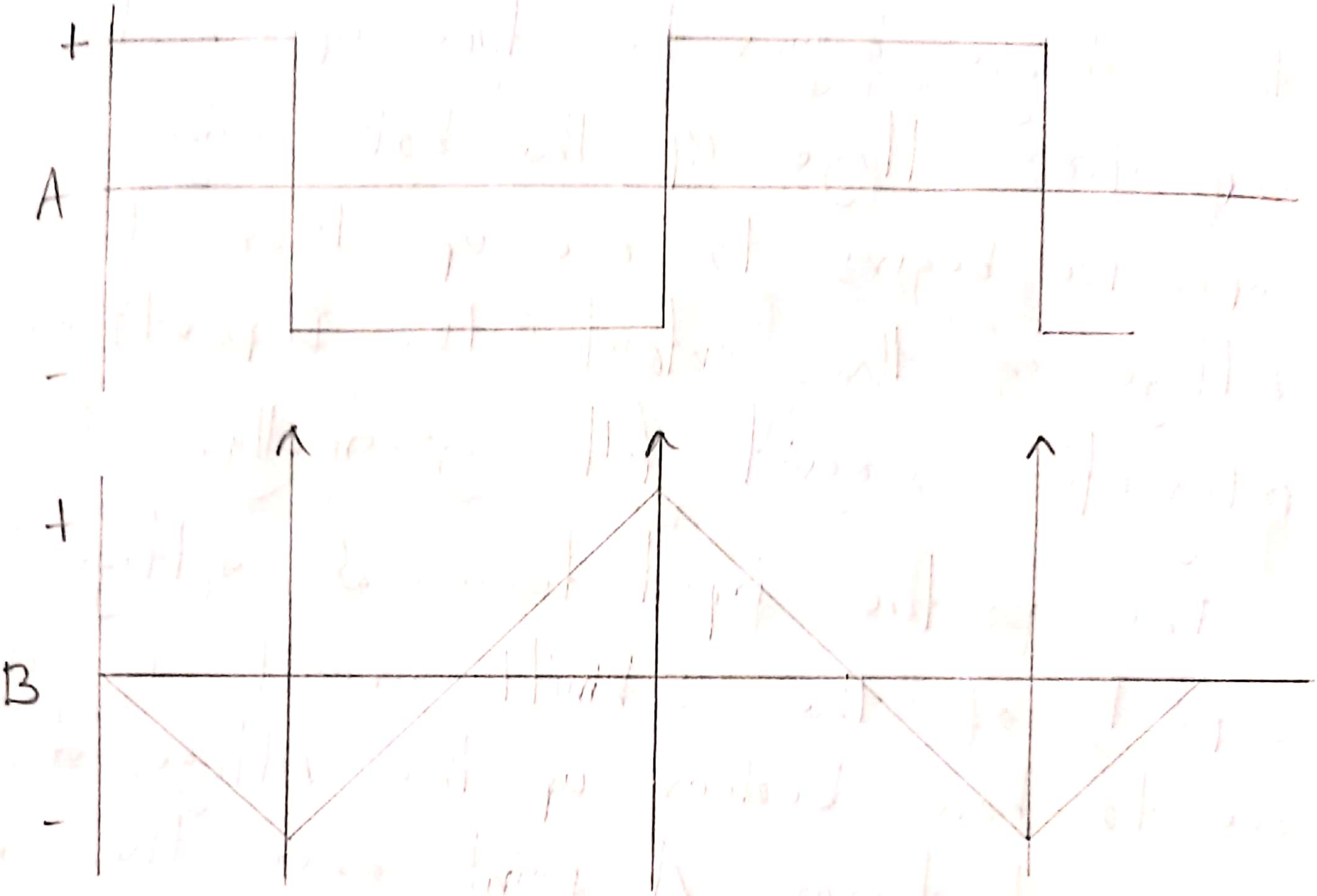
Report:

1.



2. The circuit is composed of the Schmitt circuit and the integration circuit.

In case of turning on, the output (the A point) of the Schmitt circuit becomes the positive or negative saturated voltage.

The electric current move through the

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capacitor c through the resistor R1 when the A point becomes positive. When the electric charge begins to store up in the capacitor, voltage of the both edges of the capacitor begins to rise up, then the voltage of the output (the B point) of the integration circuit falls gradually.

The positive input terminal voltage (the c point) of the Schmitt circuit is the one to have broken up the voltage difference between A point and the B point with the resistors R2 and R3. The voltage of the c point goes down as well, when voltage of the B point starts to go down. The resistors R2 and R3 play a great role in determining the fall pecentage.

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As soon as the voltage of the c point falls below 0V, the voltage of the ~~oup~~ output (the A point) of the Schmitt circuit changes into the minus very fast. For the voltage of the C point to fall below 0V, the condition of R2 being greater than R3 is necessary. After that, the flow of electric current to the capacitor C reverses and the electric current moves through the direction of the point A through the resistor R1. Because of this, the voltage of the B point rises up gradually.

When the voltage of the c point surpasses 0V, the output (the A point) of the Schmitt circuit changes into the plus rapidly. this makes the B

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point change to the direction of the negative. Here also, the condition of R2 being greater than R3 helps the voltage of the c point to surpass 0V. Lastly, the repeatition of the above mentioned steps get us the square wave as the output of the A point and the triangular wave as the output of B point.

3. No, the integrator circuit can't be implemented with an inductor.

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Theoretical frequency $= \left(\frac{1}{4 \times R_1 \times C}\right)\left(\frac{R_2}{R_3}\right)$

$$= \frac{1}{4 \times 10 \times 10^3 \times 0.4 \times 10^{-6}} \times \frac{10 \times 10^3}{4 \times 10^3}$$

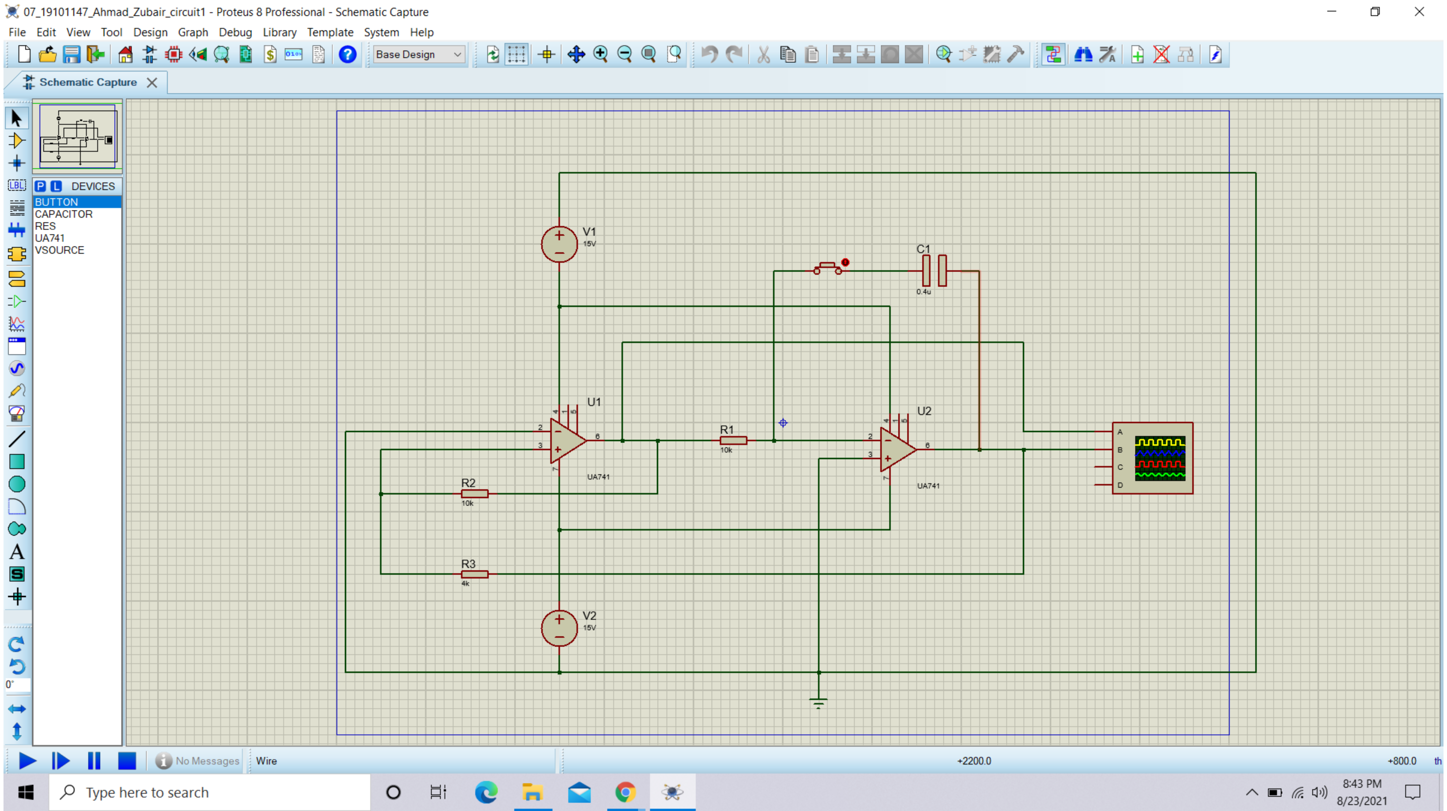
$= 156.25$ Hz

Experimental time period, $T = 6.5$ ~~ms~~ ms

$\therefore$ Experimental frequency, $F = \frac{1}{6.5 \times 10^{-3}}$

$= 153.8461$ Hz

Theoretical Frequency	Experimental Time Period, T (ms)	Experimental Frequency, F (Hz)
156.25	6.5	153.8461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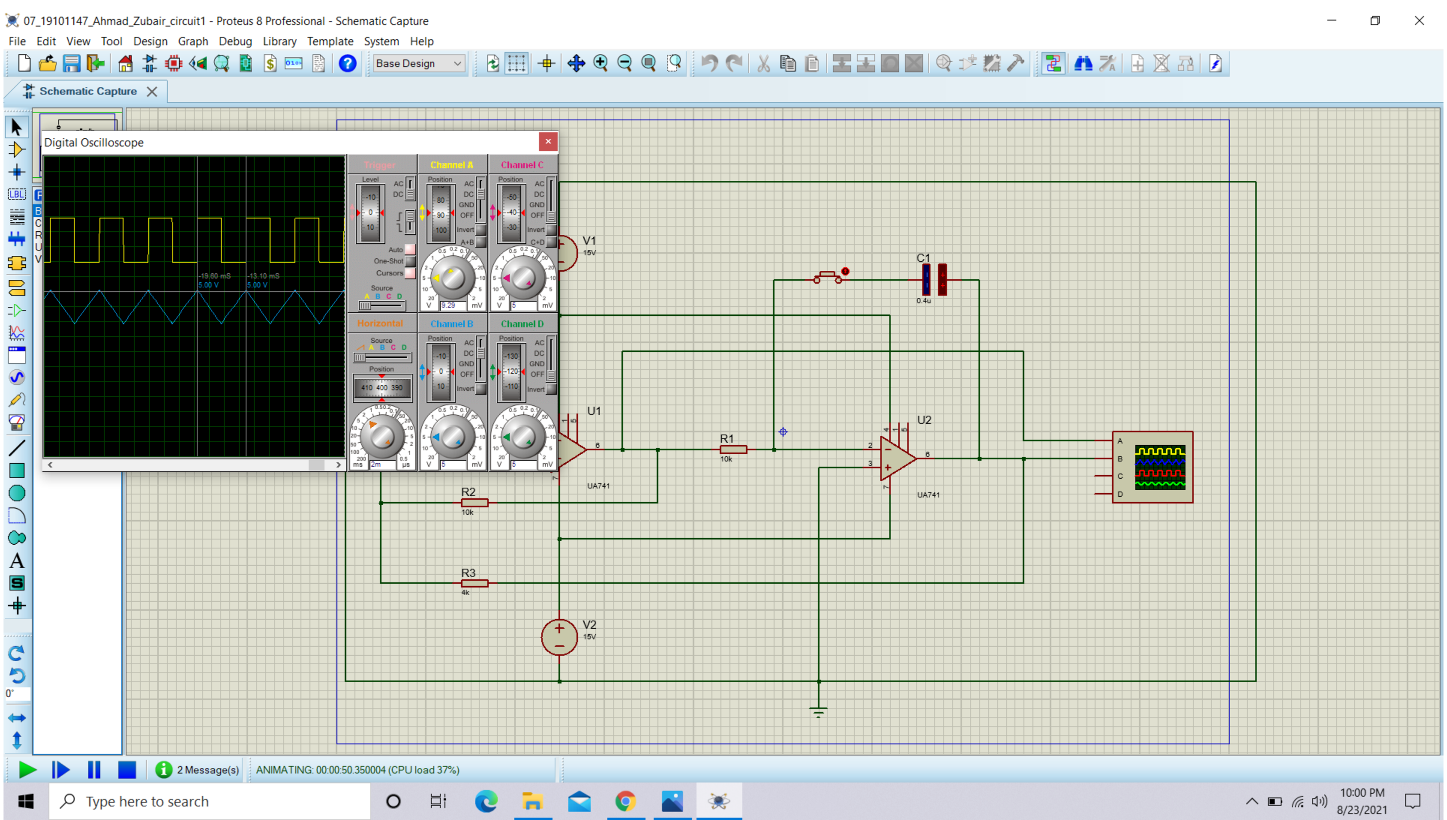
File Edit View Tool Design Graph Debug Library Template System Help
Schematic Capture
DEVICES
BUTTON
CAPACITOR
RES
UA741
VSOURCE
V1
15V
C1
0.4u
U1
U2
R1
10k
R2
10k
R3
4k
V2
15V
UA741
A
B
C
D
No Messages
Wire
+2200.0
+800.0
Type here to search
8:43 PM
8/23/2021


07_19101147_Ahmad_Zubair_circuit1 - Proteus 8 Professional - Schematic Capture
File Edit View Tool Design Graph Debug Library Template System Help
Schematic Capture
Digital Oscilloscope
Trigger
Channel A
Channel C
Horizontal
Channel B
Channel D
V1
15V
C1
0.4u
U1
U2
R1
10k
R2
10k
R3
4k
V2
15V
UA741
A
B
C
D
2 Message(s)
ANIMATING: 00:00:50.350004 (CPU load 37%)
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