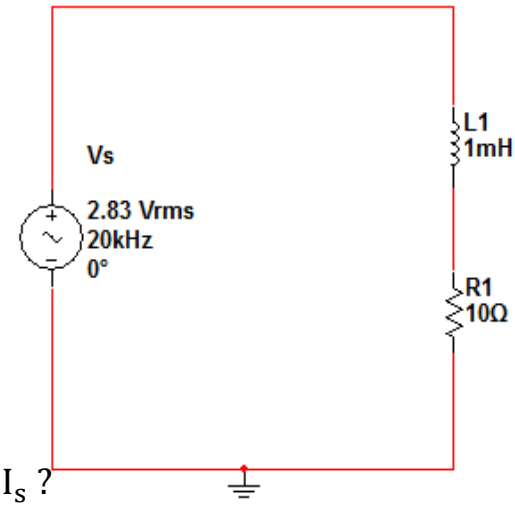
**Name:** **ID:**

Razan Monther Jaradat. 1931783

- **Construct the circuits shown below and answer the following questions.**

## A- RL Circuit




1- $V_L$ [ lag, Lead, In phase]with $I_L$ ?

Lag

2- Find the magnitude of $V_L$ , $V_R$ and $I_L$ ?

3- *Find the phase shift between* $V_s$ *and* $I_s$ ?

4- Plot $V_s$ and $I_s$ on the same graph ?

$$V_p = V_{rm} \times \sqrt{2} = 2.83 \times \sqrt{2} = 4\,V$$

$$W = 2 \times \pi \times f = 2 \times \pi \times 20000 = 40000\pi\,, \quad W \times L = 40\pi$$

$$I_L = \frac{V_p}{\sqrt{R^2 + (WL)^2}} = 0.032\,mA$$

$$V_R = I_L \times R = 0.032 \times 10 = 0.32\,V$$

$$\theta = \tan^{-1}\left(\frac{40\pi}{10}\right) = 85.5°$$

$$V_L = 0.032 * 125.66 = 4.02$$

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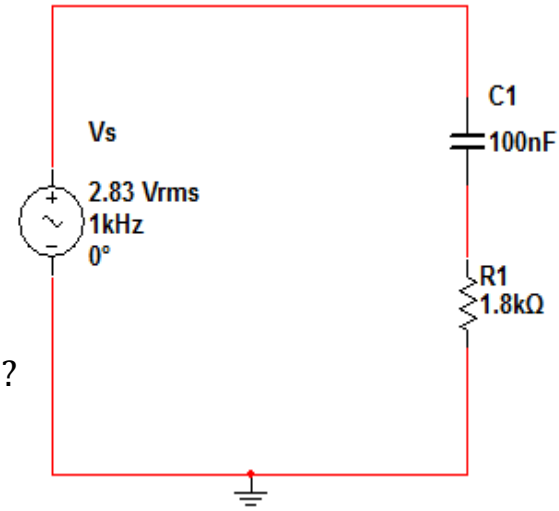
## B- RC Circuit




1- $V_C$ [ lag, Lead, In phase]*with* $I_C$ ?

Lead

2- Find the magnitude of $V_C$ , $V_R$ and $I_C$ ?

3- Find the phase shift between $V_s$ and $I_s$ ?

4- Plot $V_s$ and $I_s$ on the same graph ?

$$V_p = V_{rm} \times \sqrt{2} = 2.83 \times \sqrt{2} = 4\ V$$

$$W = 2{*}\pi{*}f = 2000\pi$$

$$I_c = \frac{V_p}{\sqrt{R^2 + (1/WC)^2}} = 0.7\ \mu A$$

$$\theta = \tan^{-1}\left(\frac{1}{1800 * 2000 * \pi * 100 * 10^{-9}}\right) = 89.4°$$

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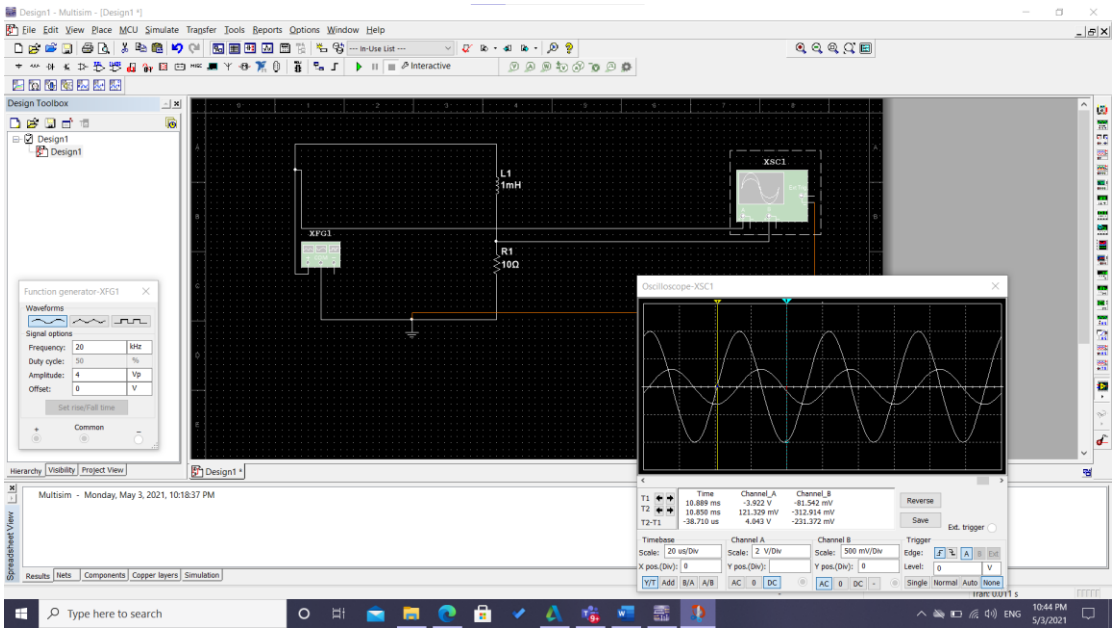
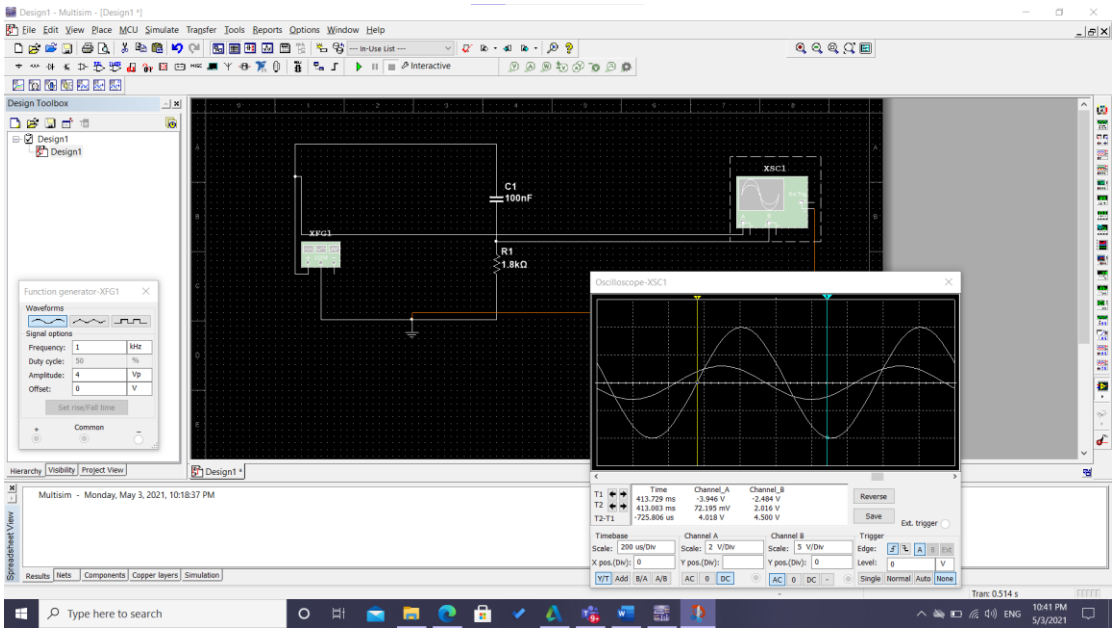

L1
1mH
XSC1
XFG1
R1
10Ω
Oscilloscope-XSC1
Function generator-XFG1
Multisim - Monday, May 3, 2021, 10:18:37 PM
Type here to search
10:44 PM
5/3/2021


C1
100nF
XSC1
XFG1
R1
1.8kΩ
Oscilloscope-XSC1
Function generator-XFG1
Multisim - Monday, May 3, 2021, 10:18:37 PM
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5/3/2021