**RC Series Circuit Hands On CLO# 2**

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objective:**

Given necessary materials, build the circuit, and take requested measurements, as evidenced by completing all data requested.

**Materials:**

|  |  |
| --- | --- |
| **Provided by the Student** | **Provided by the Department** |
| 1. Proto-Board | 1. AC generator |
| 2. VOM | 2. Oscilloscope |
| 3. Resistor Kit/Capacitor |  |
| 4. Wire |  |
| 5. Calculator |  |

|  |  |
| --- | --- |
| E = 1.5V  R = 330Ω  C = 0.1µF |  |

From the schematic above, calculate the appropriate values using 200Hz and complete the *Design Table 1* below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Ω | I | E | Power |
| R |  |  |  |  |
| C |  |  |  |  |
| Total |  |  |  |  |
| θ |  |

*Design Table 1*

Construct the circuit on the proto board. Take measurements of each component and complete the *Measured Table 1* below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Ω | I | E | Power |
| R |  |  |  |  |
| C |  |  |  |  |
| Total |  |  |  |  |
| θ |  |

*Measured Table 1*

Change the frequency to 400Hz. Calculate the appropriate values and complete the *Design Table 2* below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Ω | I | E | Power |
| R |  |  |  |  |
| C |  |  |  |  |
| Total |  |  |  |  |
| θ |  |

*Design Table 2*

Take measurements of each component and complete the *Measured Table 2* below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Ω | I | E | Power |
| R |  |  |  |  |
| C |  |  |  |  |
| Total |  |  |  |  |
| θ |  |

*Measured Table 2*

Change the frequency to 600Hz. Calculate the appropriate values and complete the *Design Table 3* below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Ω | I | E | Power |
| R |  |  |  |  |
| C |  |  |  |  |
| Total |  |  |  |  |
| θ |  |

*Design Table 3*

Take measurements of each component and complete the *Measured Table 3* below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Ω | I | E | Power |
| R |  |  |  |  |
| C |  |  |  |  |
| Total |  |  |  |  |
| θ |  |

*Measured Table 3*

**Conclusions**

1. Is there a phase shift between voltage and current in a resistor (yes / no)
2. As frequency increases the capacitor’s current ( increases, decreases)
3. As the frequency decreases, the power ( increases, decreases, stays the same)
4. What was the relationship between voltage and current in the circuit?
5. What was the effect of increasing the frequency on the circuit?

**Instructors Notes**