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| |  |  |  | | --- | --- | --- | | **Lab on RC and RL Circuits** | **Name** |  | |  |  |  | |  | **Date** |  | |
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| |  |  |  | | --- | --- | --- | |  | **Partner #1** |  | |  |  |  | |  | **Partner #2** |  | |
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| **RC and RL CircuitsWorksheet** |
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| **Experiment #1 – RC Circuit #1:** |
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| **Complete and fill in Data Table 01** |
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| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **RC Circuit** | **#1** |  |  |  |  | |  |  |  |  |  |  | | **R ()** | **1000** |  |  |  |  | | **Nominal C (F)** | **0.1** |  |  | **Slope (1/s)** |  | | **Frequency (Hz)** |  |  |  | ** (s)** |  | | **Time Base (ms)** |  |  |  | **Measured C (F)** |  | |  |  |  |  | **%diff** |  | |  |  |  |  |  |  | | **V/V0** | **t - boxes** | **t (s)** | **1-V/V0** | **ln(1-V/V0)** |  | | **0.1** |  |  |  |  |  | | **0.3** |  |  |  |  |  | | **0.5** |  |  |  |  |  | | **0.7** |  |  |  |  |  | | **0.9** |  |  |  |  |  | |
|  |
| Produce a full-page plot of ln(1-V/V0) on the y-axis and t on the x-axis. Make sure you have a properly formatted title and axis labels. Include a properly formatted trend-line on the plot as well. |
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| **Experiment #2 – RC Circuit #2:** |
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| **Complete and fill in Data Table 02** |
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| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **RC Circuit** | **#2** |  |  |  |  | |  |  |  |  |  |  | | **R ()** | **270** |  |  |  |  | | **Nominal C (F)** | **0.56** |  |  | **Slope (1/s)** |  | | **Frequency (Hz)** |  |  |  | ** (s)** |  | | **Time Base (ms)** |  |  |  | **Measured C (F)** |  | |  |  |  |  | **%diff** |  | |  |  |  |  |  |  | | **V/V0** | **t - boxes** | **t (s)** | **1-V/V0** | **ln(1-V/V0)** |  | | **0.1** |  |  |  |  |  | | **0.3** |  |  |  |  |  | | **0.5** |  |  |  |  |  | | **0.7** |  |  |  |  |  | | **0.9** |  |  |  |  |  | |
|  |
| Produce a full-page plot of ln(1-V/V0) on the y-axis and t on the x-axis. Make sure you have a properly formatted title and axis labels. Include a properly formatted trend-line on the plot as well. |
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| **Experiment #3 – RL Circuit #1:** |
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| **Complete and fill in Data Table 03** |
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| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **RL Circuit** | **#1** |  |  |  |  | |  |  |  |  |  |  | | **R ()** | **100** |  |  |  |  | | **Nominal L (mH)** | **10** |  |  | **Slope (1/s)** |  | | **Frequency (Hz)** |  |  |  | ** (s)** |  | | **Time Base (ms)** |  |  |  | **Measured L (mH)** |  | |  |  |  |  | **%diff** |  | |  |  |  |  |  |  | | **V/V0** | **t - boxes** | **t (s)** | **1-V/V0** | **ln(1-V/V0)** |  | | **0.1** |  |  |  |  |  | | **0.3** |  |  |  |  |  | | **0.5** |  |  |  |  |  | | **0.7** |  |  |  |  |  | | **0.9** |  |  |  |  |  | |
|  |
| Produce a full-page plot of ln(1-V/V0) on the y-axis and t on the x-axis. Make sure you have a properly formatted title and axis labels. Include a properly formatted trend-line on the plot as well. |
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| **Experiment #4 – RL Circuit #2:** |
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| **Complete and fill in Data Table 04** |
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| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **RL Circuit** | **#2** |  |  |  |  | |  |  |  |  |  |  | | **R ()** | **470** |  |  |  |  | | **Nominal L (mH)** | **2.2** |  |  | **Slope (1/s)** |  | | **Frequency (Hz)** |  |  |  | ** (s)** |  | | **Time Base (ms)** |  |  |  | **Measured L (mH)** |  | |  |  |  |  | **%diff** |  | |  |  |  |  |  |  | | **V/V0** | **t - boxes** | **t (s)** | **1-V/V0** | **ln(1-V/V0)** |  | | **0.1** |  |  |  |  |  | | **0.3** |  |  |  |  |  | | **0.5** |  |  |  |  |  | | **0.7** |  |  |  |  |  | | **0.9** |  |  |  |  |  | |
|  |
| Produce a full-page plot of ln(1-V/V0) on the y-axis and t on the x-axis. Make sure you have a properly formatted title and axis labels. Include a properly formatted trend-line on the plot as well. |
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