Lab 6 – Results: Filters and Resonance

*ECE203: Electrical Circuits II*

|  |  |  |
| --- | --- | --- |
| Name | Student ID | CCID |
|  |  |  |

# Low-pass RC Filter

|  |  |  |  |
| --- | --- | --- | --- |
| **Freq (Hz)** | **Vin (VP2P)** | **Vout (VP2P)** | **Vout/Vin** |
| 100 |  |  |  |
| 500 |  |  |  |
| 1000 |  |  |  |
| 2000 |  |  |  |
|  |  |  |  |
| 5000 |  |  |  |
| 10000 |  |  |  |
| 20000 |  |  |  |
| 100000 |  |  |  |

# High-pass RC Filter

|  |  |  |  |
| --- | --- | --- | --- |
| 1. **Freq (Hz)**
 | 1. **Vin (VP2P)**
 | 1. **Vout (VP2P)**
 | 1. **Vout/Vin**
 |
| 1. 100
 |  |  |  |
| 1. 500
 |  |  |  |
| 1. 1000
 |  |  |  |
| 1. 2000
 |  |  |  |
|  |  |  |  |
| 1. 5000
 |  |  |  |
| 1. 10000
 |  |  |  |
| 1. 20000
 |  |  |  |
| 1. 100000
 |  |  |  |

# Low-pass RL Filter

|  |  |  |  |
| --- | --- | --- | --- |
| 1. **Freq (Hz)**
 | 1. **Vin (VP2P)**
 | 1. **Vout (VP2P)**
 | 1. **Vout/Vin**
 |
| 1. 100
 |  |  |  |
| 1. 1000
 |  |  |  |
| 1. 2000
 |  |  |  |
| 1. 5000
 |  |  |  |
|  |  |  |  |
| 1. 10000
 |  |  |  |
| 1. 20000
 |  |  |  |
| 1. 50000
 |  |  |  |
| 1. 100000
 |  |  |  |

# Band-pass RLC Filter

|  |  |  |  |
| --- | --- | --- | --- |
| 1. **Freq (Hz)**
 | 1. **Vin (VP2P)**
 | 1. **Vout (VP2P)**
 | 1. **Vout/Vin**
 |
| 1. 100
 |  |  |  |
| 1. 1000
 |  |  |  |
|  |  |  |  |
| 1. 4000
 |  |  |  |
|  |  |  |  |
| 1. 6000
 |  |  |  |
|  |  |  |  |
| 1. 50000
 |  |  |  |
| 1. 100000
 |  |  |  |

The following pages have been left for you to include the plots that you are required to create as part of your post-lab.

To create your plots you can use whichever software you would like (Excel, Matlab, etc), export your plot as an image and import it into your Lab 2 - Results sheet in the appropriate place.

Your plots should include:

* A Plot title
* Label your axes and show what unit of measure is used.
* Include a marking for your data-points.
* Include a line between your data-points in the same series.
* Include a legend.
* Make sure your scales are appropriate and visible.

# RC Low-pass and High-pass Filters

< Insert your plot here >

Delete all the light grey text and insert your plot.

RC Low-pass and High-pass Filters: Plot Vout/Vin for both the RC Low-pass and High-pass Filters vs. Frequency (Hz) – Use a log scale for both the y and x axes.

# RL Low-pass Filter

< Insert your plot here >

Delete all the light grey text and insert your plot.

RL Low-pass Filter: Plot Vout/Vin for the RL Low-pass Filter vs. Frequency (Hz) – Use a log scale for both the y and x axes.

# RLC Band-pass Filter

< Insert your plot here >

Delete all the light grey text and insert your plot.

RLC Band-pass Filter: Plot Vout/Vin for the RLC Band-pass Filter vs. Frequency (Hz), – Use a log scale for both the y and x axes.