Prelab 5

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For both High and Low Pass cutoff frequency was about 160, is marked by the red x on the plots.

Both cutoff frequency plots show the correct characteristics for the given type of filter.

## Part 1: Low Pass

### Theoretical

|  |  |  |
| --- | --- | --- |
|  | Theoretical | |
| F(HZ) | Gain(db) | Phase Angle |
| 25 | 0.988 | -0.15708 |
| 50 | 0.954 | -0.31416 |
| 75 | 0.905 | -0.47124 |
| 100 | 0.847 | -0.62832 |
| 150 | 0.728 | -0.94248 |
| 200 | 0.623 | -1.25664 |
| 300 | 0.469 | -1.88496 |
| 500 | 0.303 | -3.1416 |
| 600 | 0.256 | -3.76992 |
| 700 | 0.222 | -4.39824 |
| 800 | 0.195 | -5.02656 |
| 900 | 0.174 | -5.65488 |
| 1000 | 0.157 | -6.2832 |



**Figure 1.** Gain vs Frequency Plot



**Figure 2.** Phase Angle vs Frequency Plot

### Simulation

Diagram, schematic

Description automatically generated

**Figure 3.** Low Pass Circuit

Chart, line chart

Description automatically generated

**Figure 4.** Cutoff Frequency

Chart, line chart

Description automatically generated

**Figure 5.** Phase angle

## Part 2: High Pass

### Theoretical Table

|  |  |  |
| --- | --- | --- |
|  | Theoretical | |
| F(HZ) | Gain(db) | Phase Angle |
| 25 | 0.1551 | 6.369427 |
| 50 | 0.299578 | 3.184713 |
| 75 | 0.426102 | 2.123142 |
| 100 | 0.531825 | 1.592357 |
| 150 | 0.685683 | 1.061571 |
| 200 | 0.782325 | 0.796178 |
| 300 | 0.883286 | 0.530786 |
| 500 | 0.952846 | 0.318471 |
| 600 | 0.966541 | 0.265393 |
| 700 | 0.975089 | 0.22748 |
| 800 | 0.98076 | 0.199045 |
| 900 | 0.984706 | 0.176929 |
| 1000 | 0.987558 | 0.159236 |



**Figure 6.** Gain vs Frequency Plot



**Figure 7.** Phase Angle vs Frequency Plot

### Simulation

Diagram, schematic

Description automatically generated

**Figure 8. High Pass Filter Circuit**

Chart, line chart

Description automatically generated

**Figure 9.** Cutoff Frequency

A picture containing shape

Description automatically generated

**Figure 10. Phase Angle**