The Chinese University of Hong Kong

Department of Computer Science and Engineering

CENG2030 Fundamentals of Embedded System Design

Lab 4: Basic Circuit Analysis

Answer Sheet

Student Name: SID:

1. **KVL and KCL [54%]**
   1. Create and upload the TSC circuit file. [10%]
   2. Voltage measurement

Vcc: \_\_\_\_5V\_\_\_\_\_\_\_ [4%]

V1: \_\_\_3.33V\_\_\_\_ [4%]

V2: \_\_\_\_1.67V\_\_\_\_ [4%]

V3: \_\_\_\_1.67V\_\_\_\_ [4%]

Equation: Vcc = \_\_\_V1+(V2+V3)/2\_\_\_\_\_\_\_\_\_\_\_\_ [4%]

* 1. Current measurement

I0: \_\_-3.33mA\_\_\_\_ [4%]

I1: \_\_3.33mA\_\_\_ [4%]

I2: \_\_-1.67mA\_\_ [4%]

I3: \_\_1.67mA\_\_\_ [4%]

Equation: I0 = \_\_\_-I1\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [4%]

Equation: I1 = \_\_-I2+I3\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [4%]

1. **Passive Low Pass Filter [46%]**
   1. Create and upload your circuit in TSC file. [10%]
   2. Frequency Response
      1. Collected Data [12%]

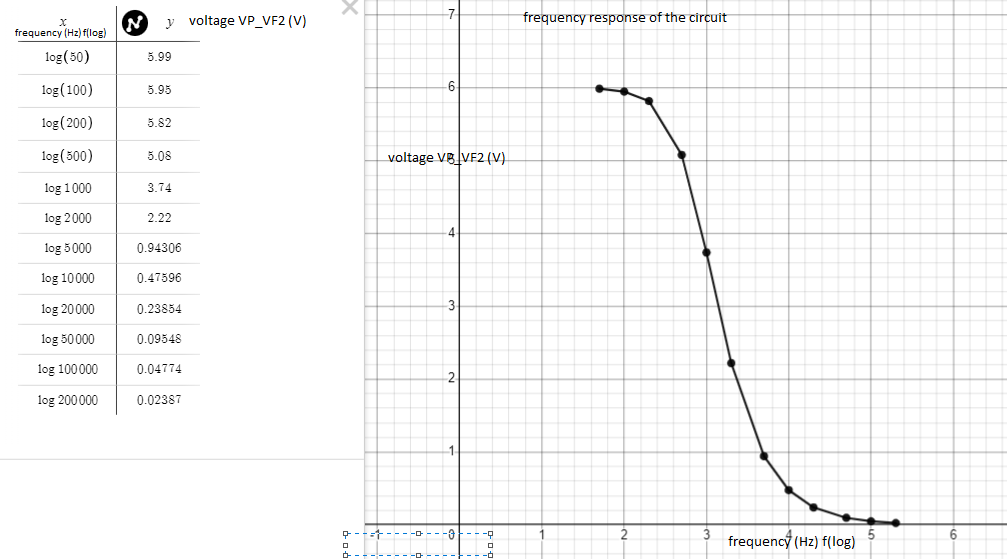
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Frequency of Vin  (Hz) | 50 | 100 | 200 | 500 | 1k | 2k | 5k | 10k | 20k | 50k | 100k | 200k |
| V**p** of Vout  (V) | 5.99 | 5.95 | 5.82 | 5.08 | 3.74 | 2.22 | 943.06 | 475.96m | 238.54m | 95.48m | 47.74m | 23.87m |

1. Cut-off Frequency

fc: = \_\_\_795.77Hz\_\_\_ [4%]

Vout at fc: \_\_\_\_4.24V\_\_\_\_ [4%]

1. Graph Plotting [16%]



THE END