

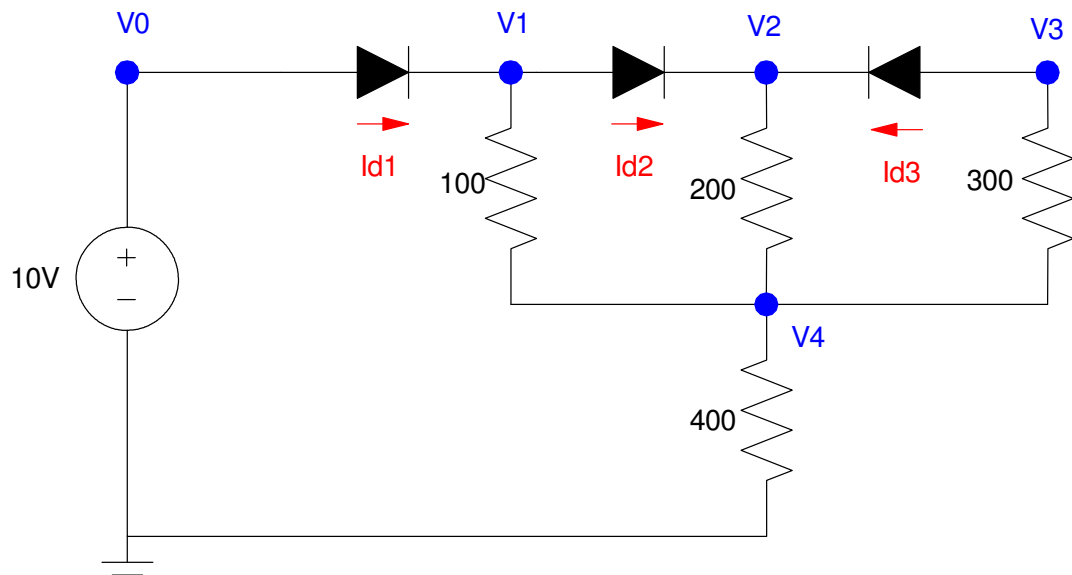
# ECE 320 - Quiz #3 - Name \_\_\_\_\_

Ideal Diodes, LEDs, AC to DC Converters - Spring 2023

1) Determine the voltages for the following circuit.

- Assume ideal silicon diodes ( $V_d = 0.7V$  when on)

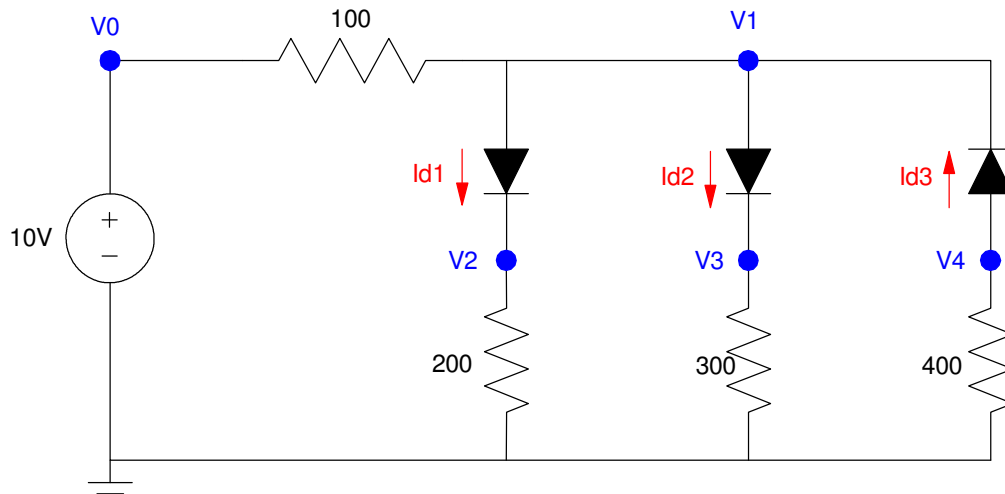
| V1 | V2 | V3 | V4 |
|----|----|----|----|
|    |    |    |    |



2) Determine the voltages for the following circuit. Assume

- Assume ideal silicon diodes ( $V_d = 0.7V$  when on)

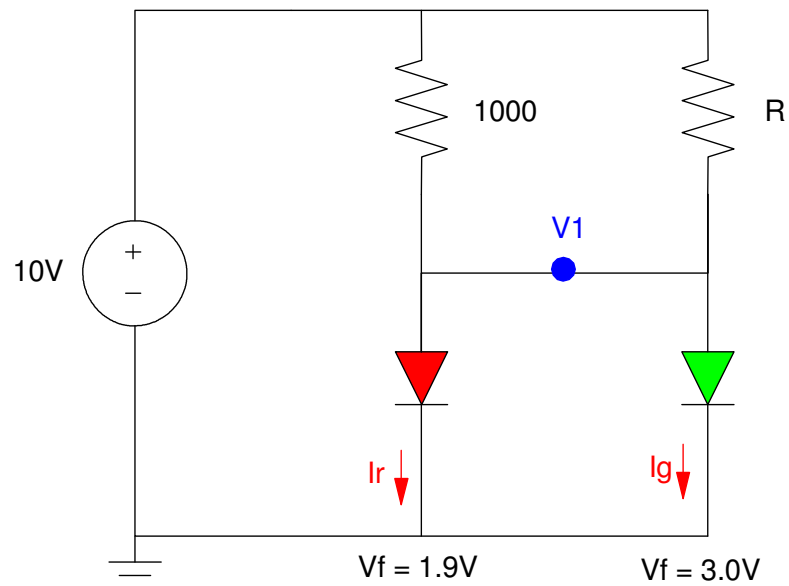
| V1 | V2 | V3 | V4 |
|----|----|----|----|
|    |    |    |    |



3) A red and green are connected to a 10V source. Determine the current and brightness of each LED. Assume

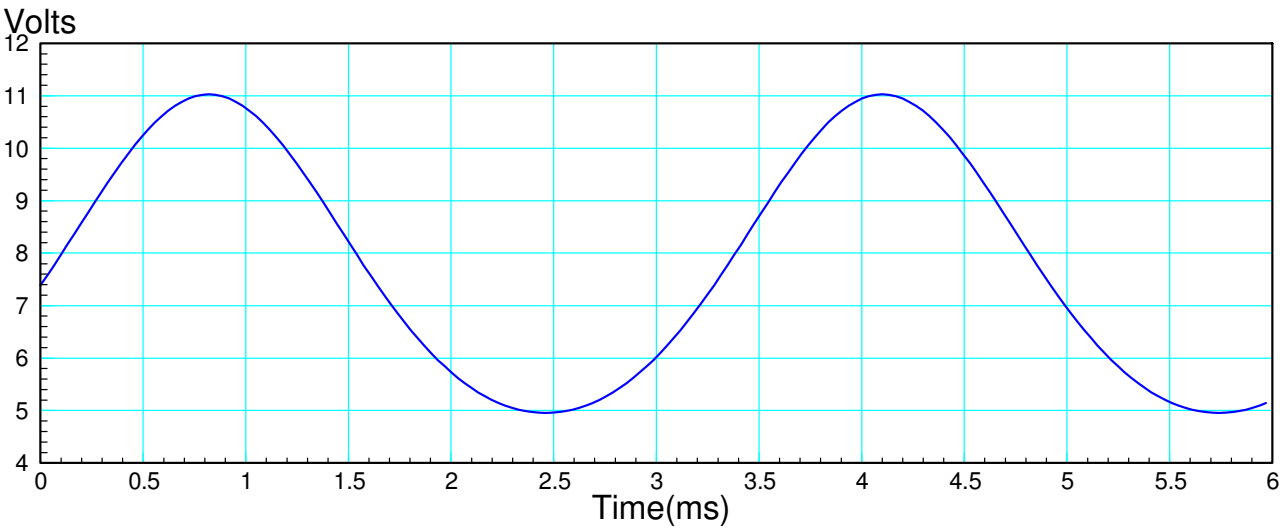
- R is  $800 + 100 \cdot (\text{your birth month}) + (\text{your birthday})$ .
- Red LED:  $V_f = 1.9\text{V}$  @  $100\text{mA}$        $5000\text{ mcd}$  @  $100\text{mA}$
- Green LED:  $V_f = 3.0\text{V}$  @  $100\text{mA}$        $5000\text{ mcd}$  @  $100\text{mA}$

| R<br>$800 + 100 \cdot \text{mo} + \text{day}$ | V1<br>Volts | Red LED |     | Green |     |
|-----------------------------------------------|-------------|---------|-----|-------|-----|
|                                               |             | $I_r$   | mcd | $I_g$ | mcd |
|                                               |             |         |     |       |     |



4) The following waveform is found using CircuitLab for an AC to DC converter. Determine the following

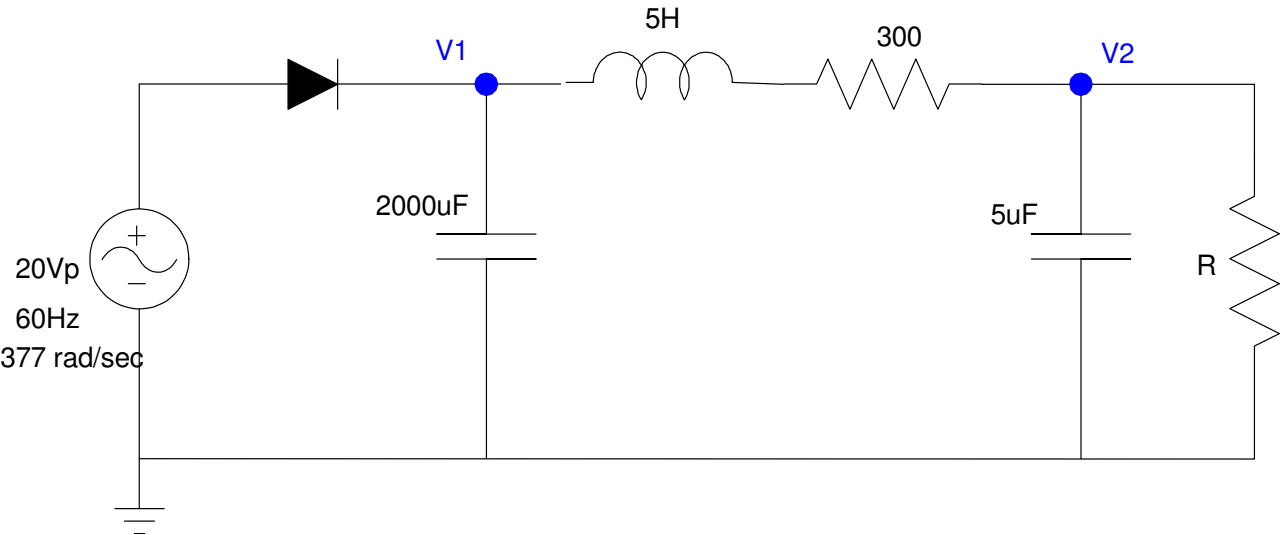
| Frequency (Hz) | Voltage      |          |
|----------------|--------------|----------|
|                | DC (average) | AC (Vpp) |
|                |              |          |



5) Determine the voltages V1 and V2 (both DC and AC). Assume

- Ideal silicon diodes ( $V_f = 0.7V$ )
- $R = 800 + 100 \cdot (\text{your birth month}) + (\text{your birthday})$

| R<br>800 + 100*mo + day | V1 |           | V2 |           |
|-------------------------|----|-----------|----|-----------|
|                         | DC | AC (V1pp) | DC | AC (V2pp) |
|                         |    |           |    |           |



6) Determine C1, and C2 so that

- The ripple at V1 is 5Vpp and
- The ripple at V2 = 1Vpp

Assume

- Ideal silicon diodes ( $V_f = 0.7V$ )
- $R = 800 + 100 * (\text{your birth month}) + (\text{your birthday})$

| C1 | C2 |
|----|----|
|    |    |

