

# ECE165 (Python for Robotics)

## CA # 1

Date of Allocation: 19<sup>th</sup> Aug., 2022

Date of Submission: 26<sup>th</sup> Aug., 2022 11:59 pm.

### Notes:

1. Each student will submit an independent solution without copying from others. Any two solutions found copied mutually, both the submissions will fetch zero marks, irrespective of how much part is copied.
2. You are free to use online resources or books.
3. The submission should be in the form of \*.ipynb file format only. The filename will be: CA1\_RegistrationNo\_RollNo.ipynb.
  - a. Neither .pdf nor .docx nor .py nor any other file formats are allowed.
  - b. In case using colab, download the file as \*.ipynb and then submit.
  - c. Overall, recommendation is to use Jupyter Notebook.
4. As \*.ipynb file format is not accepted by UMS, create a CA1\_RegistrationNo\_RollNo.zip file and upload.
5. The last date of submission is 26<sup>th</sup> August and submission after that will not be accepted. In case, any genuine problem to match the timeline, you may ask for the extended deadlines by tomorrow.

**Q.1 [a]** Given a circuit in Figure 1, write a Python program to solve it to find out the circuit current  $I_1$ ,  $I_2$ ,  $I_3$  and node voltages  $V_a$ ,  $V_b$ . [10]

**Hint:** Use the knowledge of circuit analysis to express the required unknown quantities and solve it using a Python code.

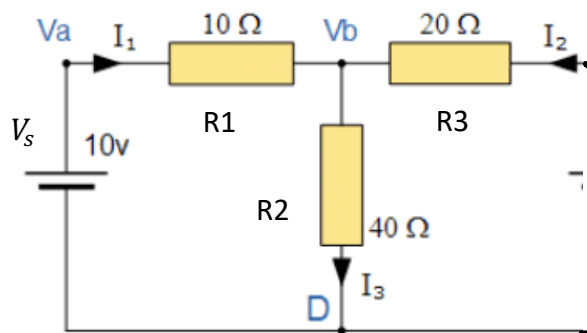


Figure: 1

**[b]** Modify the above code to use function. The function should accept the resistor values  $R_1$ ,  $R_2$  and  $R_3$ , as well, the supply voltage  $V_s$  as input parameters passed by the user. Pass the parameter voltage  $V_s$  using the default value of 10 V. The function should return branch currents  $I_1$ ,  $I_2$  and node voltages  $V_a$ ,  $V_b$  [05]

## **Q.2 Given a string:**

“Why is the media here so negative? Why are we in India so embarrassed to recognize our own strengths, our achievements? We are such a great nation. We have so many amazing success stories but we refuse to acknowledge them. Why?” President Abdul Kalam had said in one of his best speeches delivered at Indian Institute of Technology, Hyderabad.

### **Generate a code to:**

- a. **Identify no. of vowels in the string** [4]
- b. **Report number of each vowel figuring in the string** [4]
- c. **Dig out the vowel with highest number of citation** [2]
- d. **Create a user input driven interface for identification of vowels in an input string.** [5]