

ID:

Name:

**Brac University**

Semester: Spring 2023

Course Code: CSE250

Circuits And Electronics

Section: 05

Faculty: SHS

Set

A

Assessment: *Quiz 1*

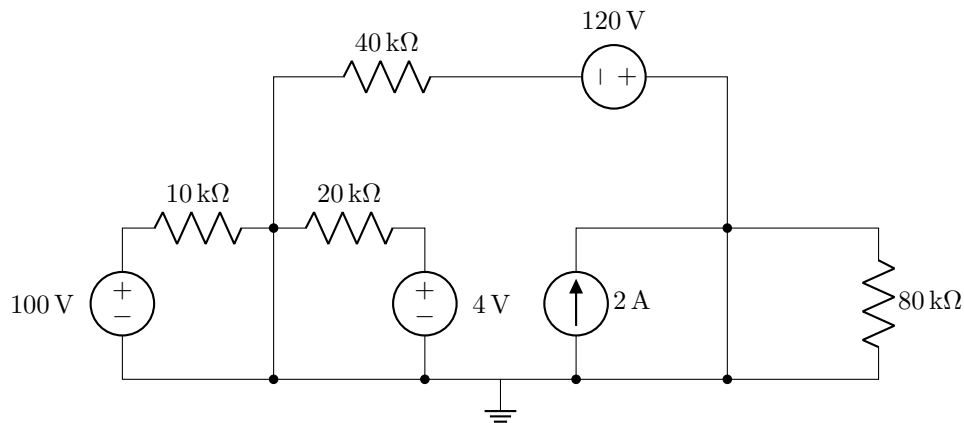
Duration: 30 minutes

Date: February 27, 2023

Full Marks (incl. bonus 0): 20

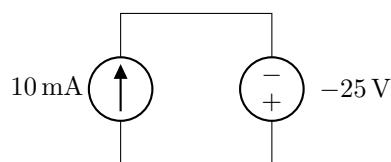
- ✓ No washroom breaks. Phones must be turned off. Using/carrying any notes during the exam is not allowed.
- ✓ At the end of the exam, both the **answer script** and the **question paper** must be returned to invigilator.
- ✓ All **4 questions** are compulsory. Marks allotted for each question are mentioned beside each question.
- ✓ Bonus questions are indicated as “(*bonus*)” along with allotted marks.
- ✓ Write your answers inside the indicated boxes. In case you run out of room for an answer, please continue on the back of the page.

### ■ Question 1 of 4 [CO1] [2 marks]



How many nodes are there in this circuit (including the ground node)? All of the nodes must be drawn and identified in the above circuit.

### ■ Question 2 of 4 [CO2] [6 marks]



- (a) [2 marks] What is the power of the current source (with appropriate  $\pm$  sign and unit)?<sup>†</sup>

- (b) [1 mark] Based on your answer in (a), is the current source supplying/consuming power?

- (c) [2 marks] What is the power of the voltage source (with appropriate  $\pm$  sign and unit)?<sup>†</sup>

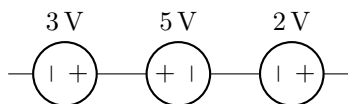
- (d) [1 mark] Based on your answer in (c), is the voltage source supplying/consuming power?

<sup>†</sup>Mark distribution: 1 mark for the sign, 0.5 mark for the value and 0.5 mark for the unit

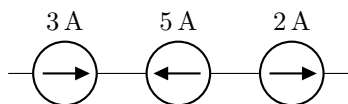
### ■ Question 3 of 4 [CO2] [2 marks]

Which of the following circuits are illegal connection? For each of the circuits below, put a checkmark (✓) on either “Legal” or “Illegal”. Explain why in each case.

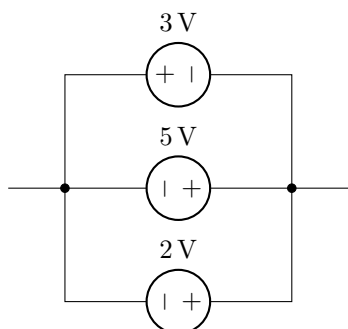
- (a) [ $\frac{1}{2}$  mark] The following connection is: ☐ Legal ☐ Illegal



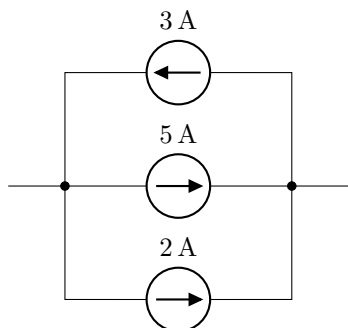
- (b) [ $\frac{1}{2}$  mark] The following connection is: ☐ Legal ☐ Illegal



- (c) [ $\frac{1}{2}$  mark] The following connection is: ☐ Legal ☐ Illegal



- (d) [ $\frac{1}{2}$  mark] The following connection is: ☐ Legal ☐ Illegal



**■ Question 4 of 4 [CO3] [10 marks]**

What is the value of equivalent resistance  $R_{eq}$ ? [Must show step by step procedure of finding  $R_{eq}$ ]

