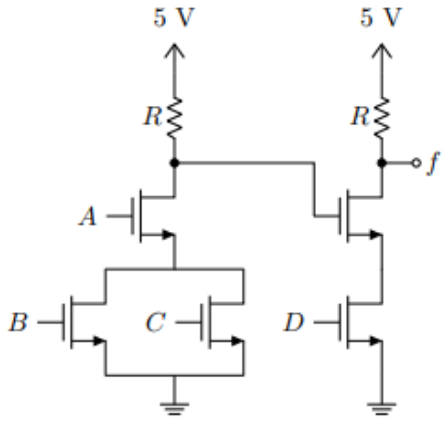
BRAC University

Semester: Fall 2022
Course No: CSE251
Course Title: Electronic Devices and Circuits
Section: 7

Quiz 3
Full Marks: 20
Time: 15 Minutes
Date: 30 November 2022

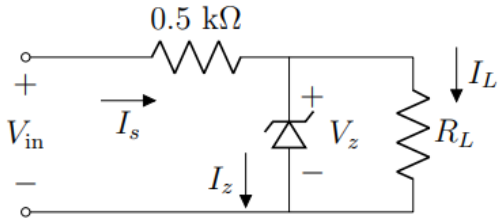
Name: **Student ID:**

1. Analyze the following circuit to find f in terms of boolean inputs A, B, C, and D. **[4.5]**



2. In the circuit, the input voltage V_{in} has a nominal voltage of 10 V with a fluctuation of ±10%. The Zener diode in the circuit is specified with parameter V_z = 5.75 V at I_z =5 mA, r_z = 0.05 kΩ, and I_{zk} = 0.3 mA.

Identify the worst-case conditions and calculate the (i) Zener current (I_z), (ii) Zener voltage (V_z), and (iii) input voltage in this worst-case scenario. **[4.5]**



3. Design a circuit using Op-Amp to implement the expression: **[11]**

$$f = -\frac{1}{3}\int x dt + 2\ln y + 4z$$

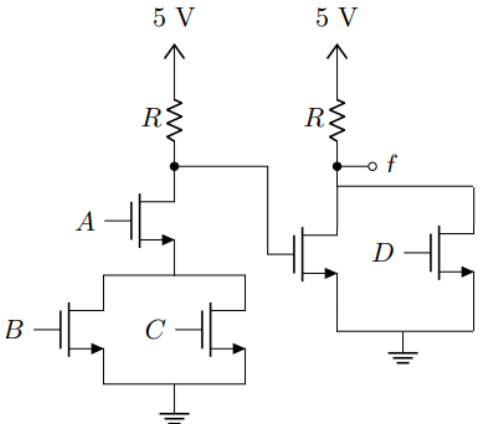
BRAC University

Semester: Fall 2022
Course No: CSE251
Course Title: Electronic Devices and Circuits
Section: 9

Quiz 3
Full Marks: 20
Time: 15 Minutes
Date: 30 November 2022

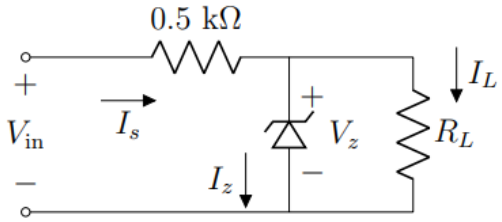
Name: **Student ID:**

1. Analyze the following circuit to find f in terms of boolean inputs A, B, C, and D. **[4.5]**



2. In the circuit, the input voltage V_{in} has a nominal voltage of 10 V with a fluctuation of ±5%. The Zener diode in the circuit is specified with parameter V_z = 5.95 V at I_z = 4.5 mA, r_z = 0.05 kΩ, and I_{zk} = 0.27 mA.

Identify the worst-case conditions and calculate the (i) Zener current (I_z), (ii) Zener voltage (V_z), and (iii) input voltage in this worst-case scenario. **[4.5]**



3. Design a circuit using Op-Amp to implement the expression: **[11]**

$$f = -\frac{1}{3}\int x dt + 2\ln y + 4z$$

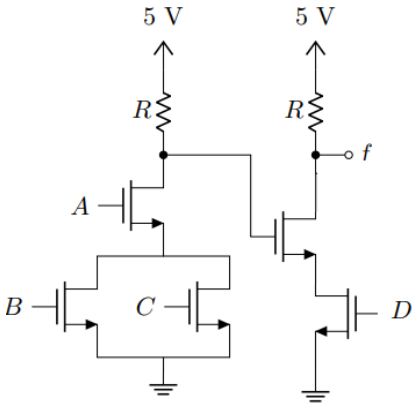
BRAC University

Semester: Fall 2022
Course No: CSE251
Course Title: Electronic Devices and Circuits
Section: 13

Quiz 3
Full Marks: 20
Time: 15 Minutes
Date: 29 November 2022

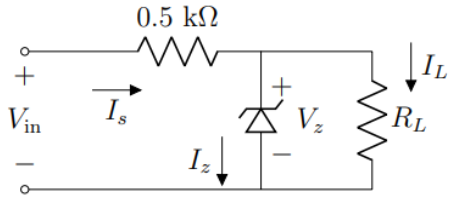
Name: **Student ID:**

1. Analyze the following circuit to find f in terms of boolean inputs A, B, C, and D. **[4.5]**



2. In the circuit, the input voltage V_{in} has a nominal voltage of 10 V with a fluctuation of ±2V. The Zener diode in the circuit is specified with parameter V_z = 5.95 V at I_z = 4.5 mA, r_z = 0.05 kΩ, and I_{zk} = 0.27 mA.

Identify the worst-case conditions and calculate the (i) Zener current (I_z), (ii) Zener voltage (V_z), and (iii) input voltage in this worst-case scenario. **[4.5]**



3. Design a circuit using Op-Amp to implement the expression: **[11]**

$$-\frac{1}{3}\int x dt + 2\exp y + 4z$$