

THIRD MIDTERM

2

Name: _____ Student ID #: _____

Discussion Instructor (circle): Barcikowski El-Gendy Johnson Rodriguez

SHOW ALL WORK!!!!

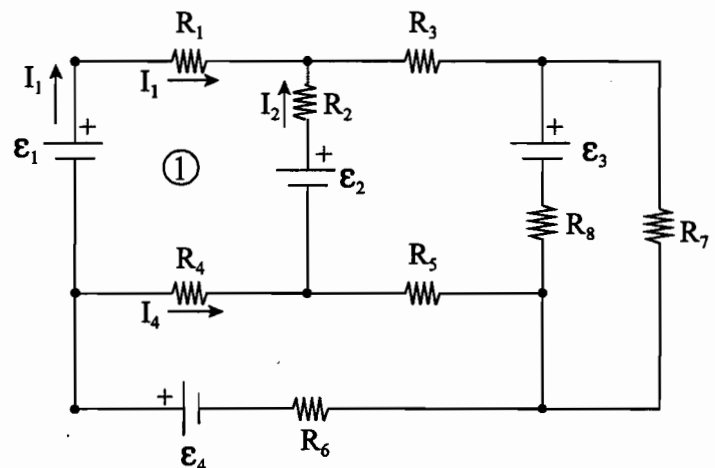
REPORT ALL NUMBERS TO THREE SIGNIFICANT FIGURES!

Use the conversion constants and data given on the front page.

Note: If you use a sign convention different from that used in class, be sure to indicate that.

For the circuit shown.

- How many total junctions are there?
- How many independent junction equations can be written?
- How many branches are there?
- How many unknown currents will be needed to analyze this circuit?
- Write the loop equations for loop ①, going clockwise around the loop.



$$\begin{aligned}
 R_1 &= 1000 \, \Omega & \epsilon_1 &= 100 \, \text{V} \\
 R_2 &= 900 \, \Omega & \epsilon_2 &= 55 \, \text{V} \\
 R_3 &= 700 \, \Omega & &
 \end{aligned}$$

a) 5

b) 4 (number of junctions - 1)

c) 8

d) 8 (same as number of branches)

e) $\epsilon_1 - I_1 R_1 + I_2 R_2 - \epsilon_2 + I_4 R_4 = 0$