

SIMON FRASER UNIVERSITY
SCHOOL OF ENGINEERING SCIENCE

Fall 2014
ENSC 220: ELECTRIC CIRCUITS I

Midterm Examination No. 1
Monday, October 6, 2014

Duration: 50 minutes. Attempt all problems. Questions are not equally weighted. Closed book and closed notes. Calculators, PDAs, laptops, and wireless phones are not permitted. Please write legibly. Illegible text will not be graded.

1. (10 points)

For the circuit shown in Figure 1:

- Determine I_{out} in terms of I_{in} , R_1 , R_2 , and μ .
- Find the power absorbed by the resistor R_2 . Use an appropriate unit for the calculated power.

2. (20 points)

In the circuit shown in Figure 2, find the power absorbed by the load R_L .

3. (40 points)

Consider the circuit shown in Figure 3:

- Write the nodal equations.
- Write the equations in a matrix form.
- Find V_A and V_{out} .
- What is the voltage gain of this amplifier circuit?

4. (30 points)

For the circuit shown in Figure 4, $V_{s1} = 225V$ and $V_{s2} = 15V$.

- Write the mesh equations and solve them.
- Find the power delivered by the dependent current source.

Figure 1:

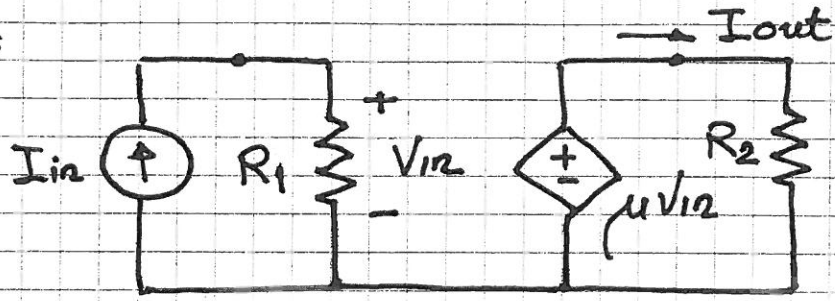


Figure 2:

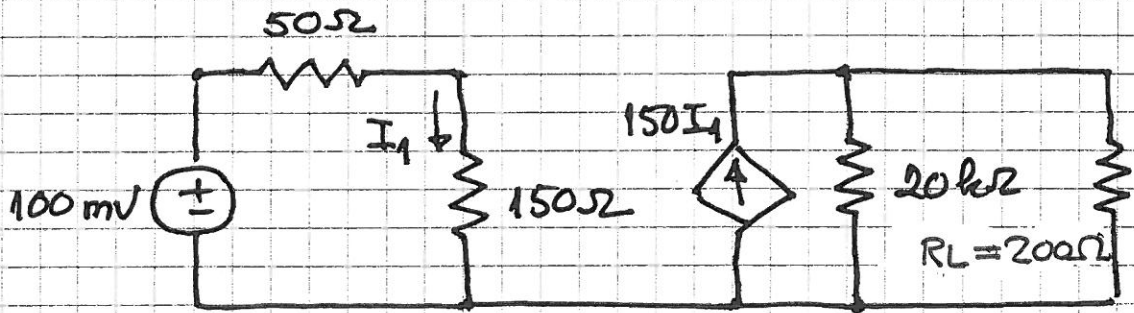


Figure 3:

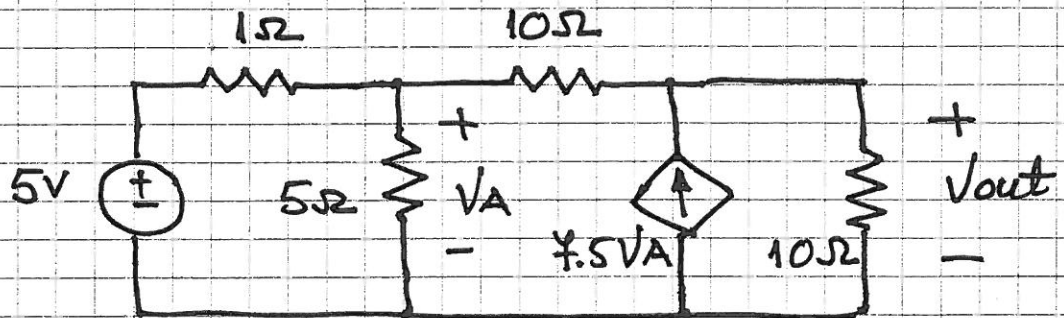


Figure 4:

