

## ECE 210 — Final Exam

Estimated time for completion: <2 hour  
8 May 2013

### Rules of the Exam

**Rule 1:** The examination period begins at 1:30pm on Wednesday 8 May 2013 and ends at 3:30pm on Wednesday 8 May 2013.

**Rule 2:** There are four problems. Each problem has equal weight.

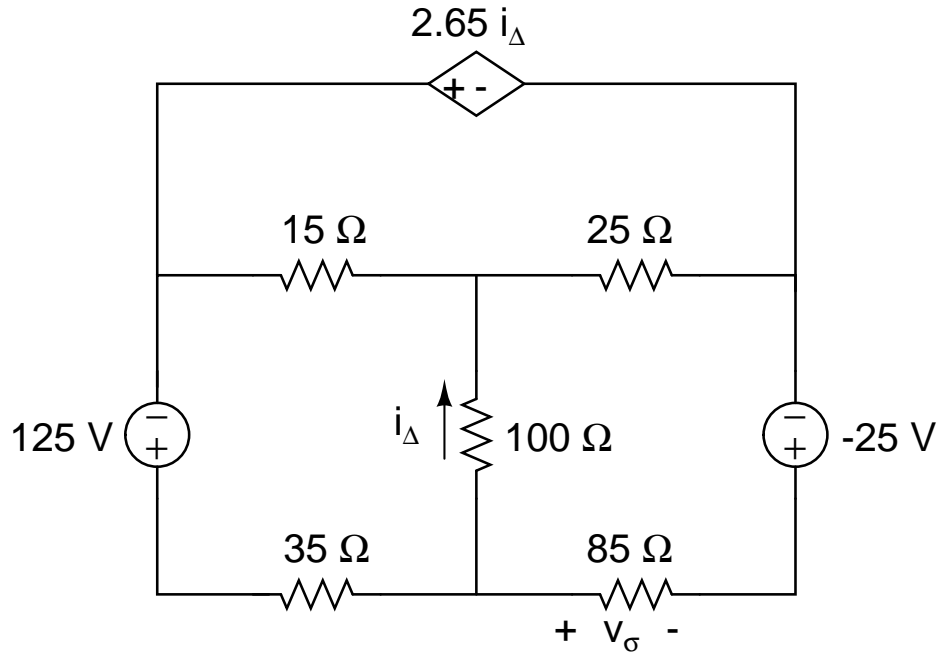
**Rule 3:** The exam is closed book and closed notes but you may use a 4" x 6" sheet of paper with notes during the exam. You may use a calculator.

**Rule 4:** There are blank pages at the end of the exam if you need additional space for calculations.

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Name

**Problem 1.** (5 pts.) Consider the circuit below:

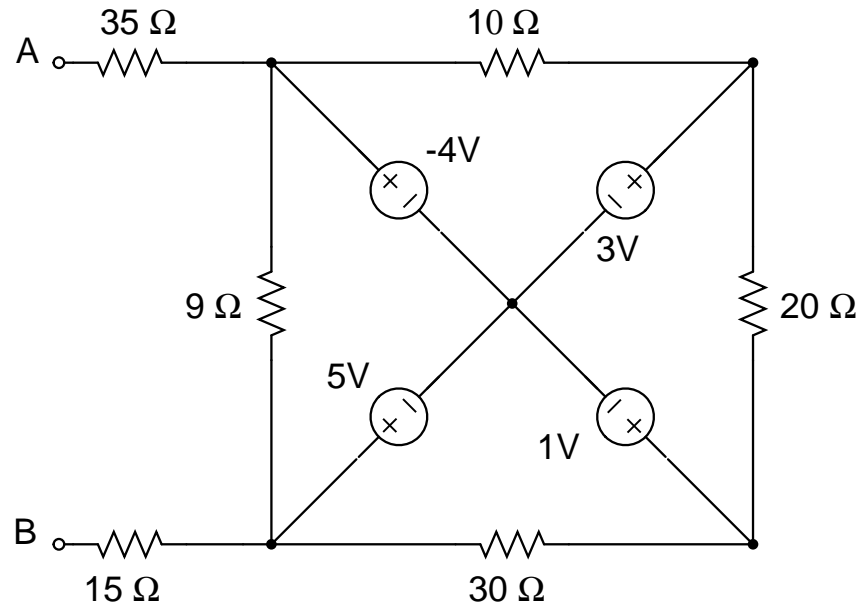


What is the voltage  $v_\sigma$ ? \_\_\_\_\_

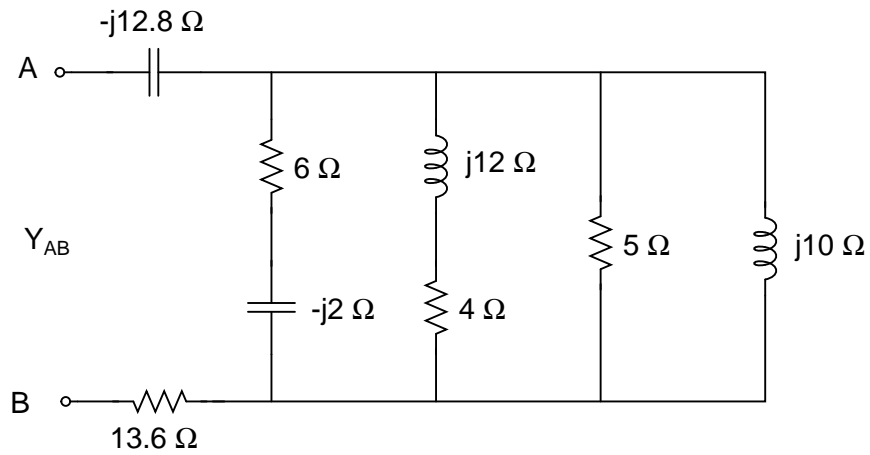
Does the dependent voltage source generate or dissipate power? \_\_\_\_\_

How much power is dissipated in this circuit? \_\_\_\_\_

**Problem 2.** (5 pts.) Draw the Thévenin Equivalent circuit at terminals “A” and “B” for the circuit below:



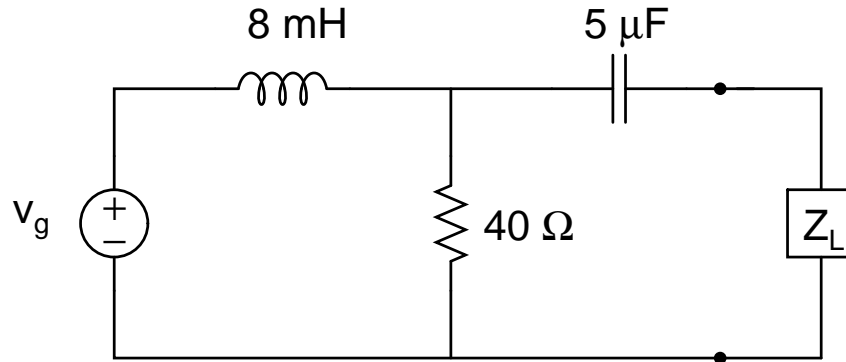
**Problem 3.** (5 pts.) What is the input admittance  $Y_{AB}$  in the circuit below?



Express the input admittance  $Y_{AB}$  in rectangular form \_\_\_\_\_

Express the input admittance  $Y_{AB}$  in polar form \_\_\_\_\_

**Problem 4.** (5 pts.) Consider the circuit below:



What load impedance will result in the maximum average power being transferred to the load if  $\omega = 5,000 \text{ rad/sec}$ . \_\_\_\_\_

What is the average power delivered to the load if  $v_g = 80 \cos 5000t \text{ V}$ ? \_\_\_\_\_

Extra Page 1

Extra Page 2