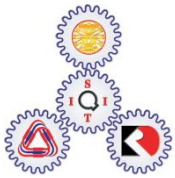

Sirindhorn International Institute of Technology
Thammasat University at Rangsit
School of Information, Computer and Communication Technology

ECS 203: Problem Set 5

Semester/Year: **2/2015**
Course Title: Basic Electrical Engineering
Instructor: Asst. Prof. Dr. Prapun Suksompong (prapun@siit.tu.ac.th)
Course Web Site: http://www2.siit.tu.ac.th/prapun/ecs203/

Due date: Feb 23, 5 PM

Instructions

1. Solve all problems. (5 pt)
   a. Write your name and ID on the top of **every** submitted page.
   b. For each part, write your explanation/derivation and answer in the space provided.
2. ONE sub-question will be graded (5 pt). Of course, you do not know which part will be selected; so you should work carefully on all of them.
3. There is no need to submit (or even print out) page 1 (this cover sheet).
4. Late submission will be rejected.
5. ***Write down all the steps*** that you have done to obtain your answers. You may not get full credit even when your answer is correct without showing how you get your answer.

Questions

1) [Alexander and Sadiku, 2009, Q3.41] Apply mesh analysis to find *i* in Figure 1.

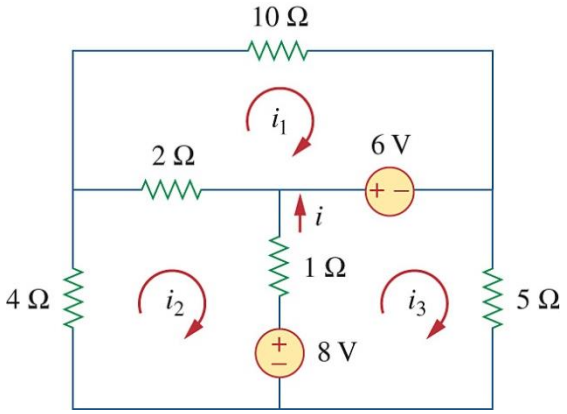

Figure 1

2) [Alexander and Sadiku, 2009, Q3.43] Use mesh analysis to find v_{ab} and i_o in the circuit in Figure 2.

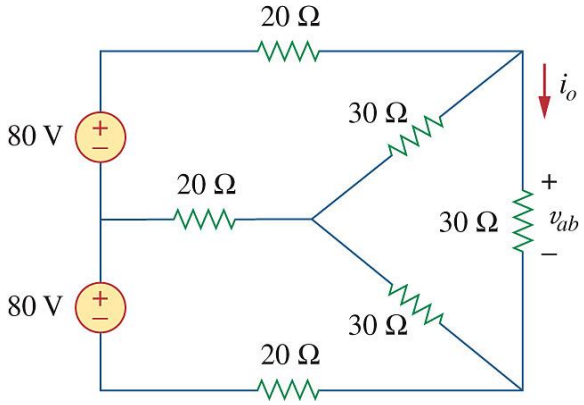

Figure 2

3) [Alexander and Sadiku, 2009, Q3.46] Use mesh analysis to solve for the mesh currents in Figure 3.

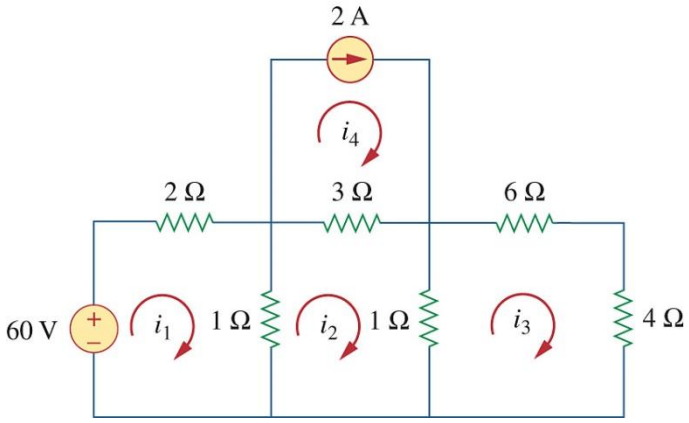

Figure 3

4) [Alexander and Sadiku, 2009, Q4.6] For the linear circuit shown in Figure 4, use linearity to complete the following table.

Experiment	V_s	V_o
1	12 V	4 V
2		16 V
3	1 V	
4		-2 V

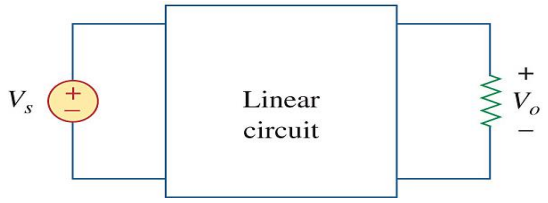

Figure 4

5) [Alexander and Sadiku, 2009, Q4.8] Using superposition, find V_o in the circuit of Figure 5.

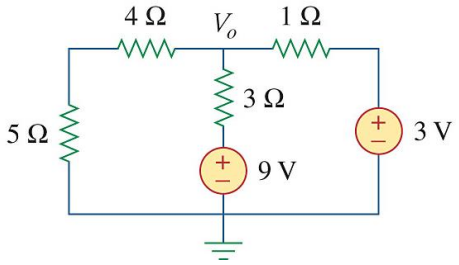

Figure 5

a. **Draw** the circuit when **only the 9V voltage source** is activated. Then, **find** V_o for this circuit using any technique(s) of your choice.

b. **Draw** the circuit when **only the 3V voltage source** is activated. Then, **find** V_o for this circuit using any technique(s) of your choice.

c. Use the values of V_o from parts (a) and (b) to find V_o in Figure 5.

6) [Alexander and Sadiku, 2009, Q4.12] Determine v_o in the circuit in Figure 6 using the superposition principle.

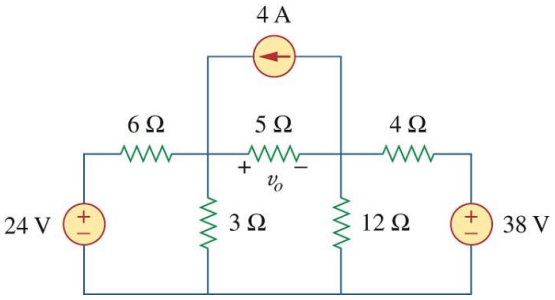

Figure 6

As in the previous question, for each "case", don't forget to redraw the circuit with appropriate source activation/deactivation.