

Sirindhorn International Institute of Technology

Thammasat University at Rangsit

School of Information, Computer and Communication Technology

ECS 203: Problem Set 10

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.siiit.tu.ac.th/prapun/ecs203/>

Due date: April 18, 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) [Irwin and Nelms, 2015, Ex 6.6] The current in a 10-mH inductor has the waveform shown in Figure 1. Determine the voltage waveform.

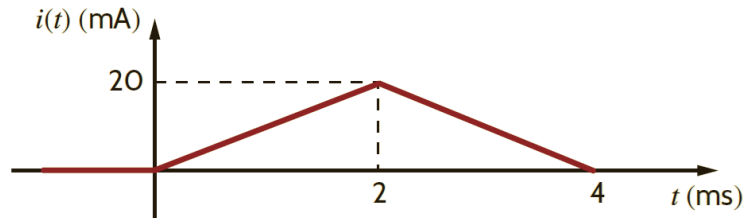


Figure 1

- 2) [Alexander and Sadiku, 2009, Q6.46] Find v_C , i_L , and the energy stored in the capacitor and inductor in the circuit of Figure 2 under dc, steady-state, conditions.

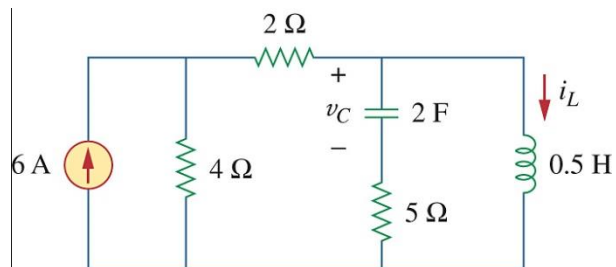


Figure 2

- 3) [Irwin and Nelms, 2015, Ex 6.6] Find the energy stored in the capacitor and inductor in the circuit of Figure 3 under dc, steady-state, conditions.

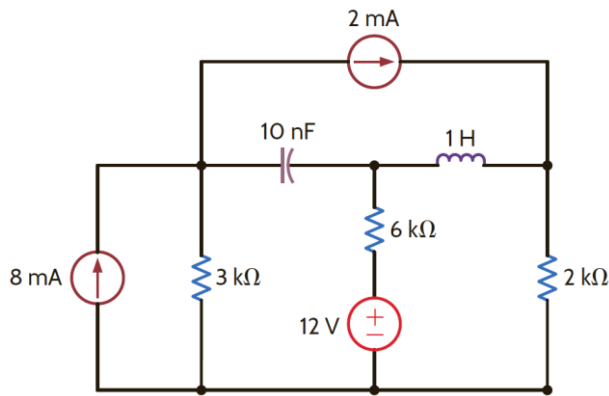


Figure 3

- 4) [Alexander and Sadiku, 2009, Q6.49] Find the equivalent inductance of the circuit in Figure 4. Assume all inductors are 10 mH.

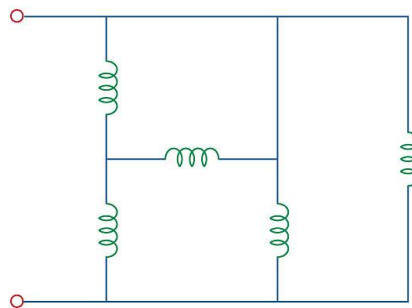


Figure 4

- 5) [Alexander and Sadiku, 2009, Q6.73] Show that the circuit in Figure 5 is a noninverting integrator.

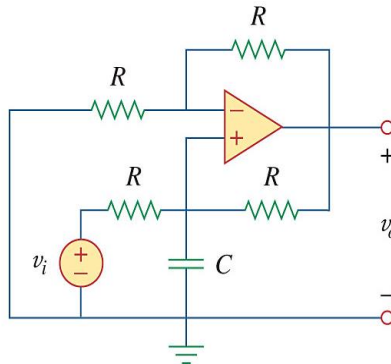


Figure 5