ROSE-HULMAN INSTITUTE OF TECHNOLOGY

ECE203 DC Circuits Spring 2016-2017

Homework Set #2

Coverage: Voltage, current, power, and energy definitions, Passive sign convention

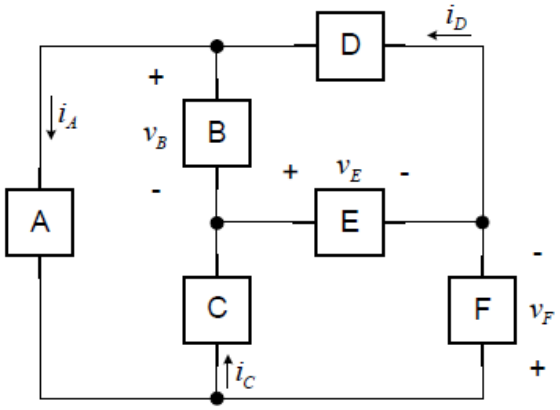
DUE Monday, March 13, 2017 – COB

1.

The heating element of a space heater is rated 2 kW, 250 V. Determine the following:

a) Rated current.
b) Charge consumed in one hour at continuous rated current.
c) Energy consumed in six hours at rated continuous current and voltage.
d) Resistance
e) Current drawn from the supply and power dissipated if the heater is accidentally connected to a 125 V supply. (Assume the resistance stays constant).

2. Label all the missing voltages and currents in the figure below so that each element follows the passive sign convention and then calculate the power absorbed or delivered by each element. Report your results in a table like the one shown below.



	Voltage (V)	Current (A)	Power (W)	Absorbed or Delivered
A	1	3		
B	2	-1		
C	1	5		
D	0	2		
E	-2	4		
F	-1	-2		

3. ***Answer T/F (explain your reasoning).***

Given that the power generated by element B is 600 mW and the power consumed by element C is 900 mW, then element A is a 300 mW source and the current I_A is -10 mA.