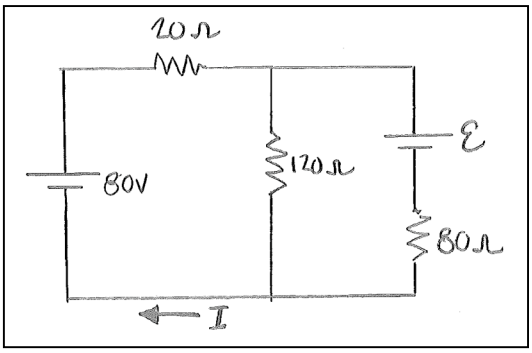
Physics 161 Fall 2010 Exam 5
Numbers and possibly circuit details will be changed on the real exam. Closed book closed notes calculators OK.



1&2. The current *I* is 1 A. What is the unknown EMF?

3&4. What is the power (in watts) dissipated in the 20 ohm resistor?

5&6. In the circuit shown below, what is the current through the battery immediately after closing the switch? EMF = 100V, R_2=R_3=10 ohms, R_1=20 ohms.

7&8. What is the current through the battery a long time after the switch is closed?

9. To measure the current through the battery, an ammeter should be connected:
A] touching points a and b
B] touching points a and g
C] touching points c and d
D] the circuit must be broken at point a and the meter inserted
E] the circuit must be broken at point c and the meter inserted
F] the circuit must be broken at point e and the meter inserted
G] none of these will work

10. To measure the voltage across resistor R_1 , a voltmeter must be connected: (choose from the answers to Q9).

11&12. The capacitor is a parallel plate air-gap capacitor with area = 0.1 m^2 and a plate separation of 0.1 mm. A long time after the switch is closed, what is the electric field in the capacitor?

13&14. What is the charge on the capacitor, in microcoulombs?

15&16. How much energy (in microJoules) is stored in the capacitor?