EE 208 : Old Major Exam # 1

Question # 1

a. If a **1.5** battery uses **15 J** to move a charge Q in **5** S, find **Q in coulombs** & the used **power**.

b. **How long** must a **1200**-W toaster work to use **6** kWh of energy?

c. A current source of **6A** supplies power to an element for **20 min** at a constant voltage V. If **0.1 kWh** is delivered, **find V**.

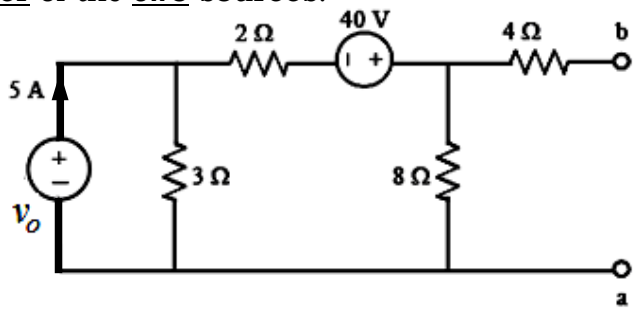
d. If a device operates at **6 V** & absorbs **12 μW**, **how many electrons** will pass through the device in **one hour**?

e. Find the **power** of a **10-Ω** resistor that carries a **2A** current. What would be its **power** if the current were **doubled**?

f. If your room **AC** operates at **220 rms** volts & uses **15 A**, what will be its **annual cost**? (*Assuming it works for 24 hours a day & the rate is 5 Halalas*)

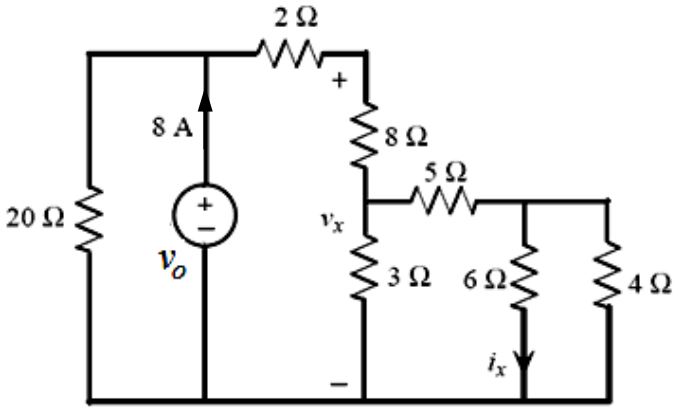
Question # 2

For the circuit shown below, find the **power** of the **two sources**.



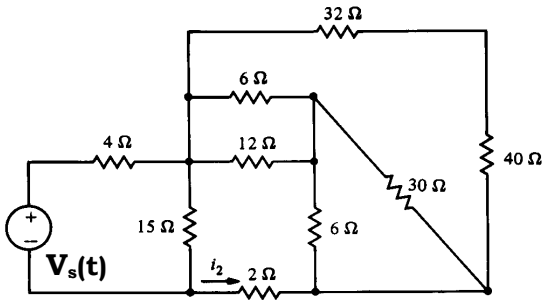
Question # 3

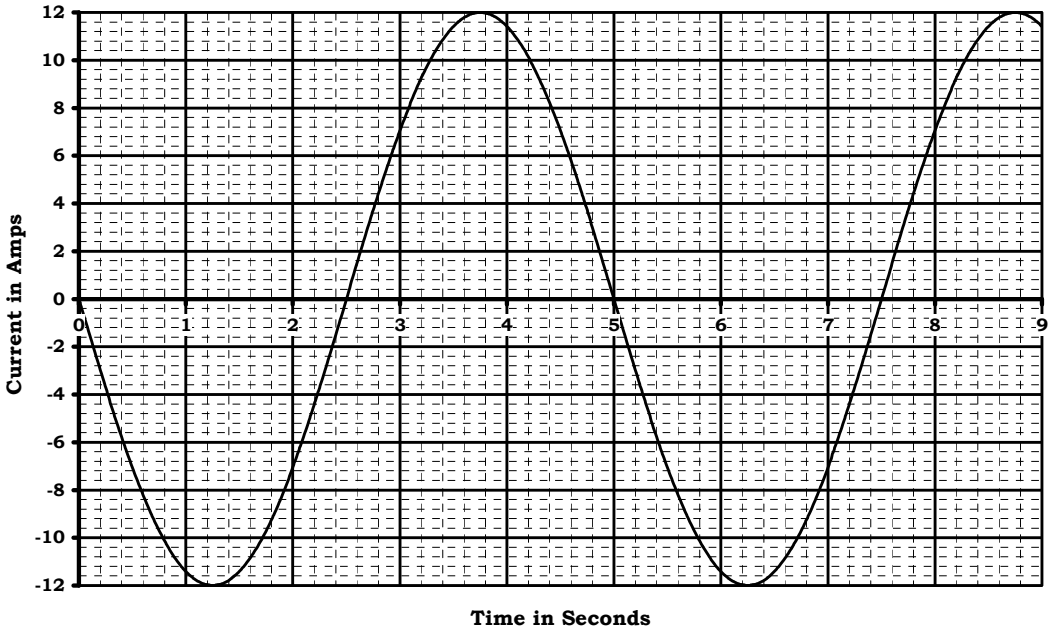
Find the **voltage** v_x and the **current** i_x for the following circuit.



Question # 4

If the figure given below represents the **current** $i_2(t)$ of the circuit, **complete** the **table** given below.





1. **Frequency** of the current $i_2(t)$ =	
2. **Instantaneous** value of the current $i_2(4.4)$ =	
3. **Half cycle average** value of the current $i_2(t)$ =	
4. **Period** of the current $i_2(t)$ =	
5. **RMS** value of the current $i_2(t)$ =	
6. **Phase shift** of the current $i_2(t)$ =	
7. **RMS** value of the voltage $\mathbf{V_s(t)}$ =	
8. **Peak to peak** value of the voltage $\mathbf{V_s(t)}$ =	
9. **Frequency** of the voltage $\mathbf{V_s(t)}$ =	