

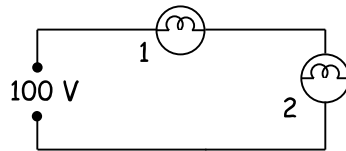
## PART A: MULTIPLE CHOICE (10 MARKS)

Choose the best response in each case and place your answer in the appropriate space on your answer sheet.

Use the following schematic circuit diagram and information to answer questions 1, 2 and 3.

$$I_2 = 2.0 \text{ A}$$

$$R_1 = 20 \ \Omega$$

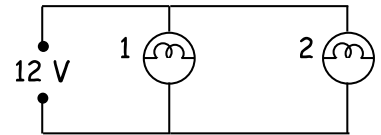


1. What is  $I_1$ ?  
 (a) 20 A  
 (b) 2.0 A  
 (c) 0.20 A
2. What is  $V_2$ ?  
 (a) 40 V  
 (b) 60 V  
 (c) 100 V
3. What is  $P_T$ ?  
 (a) 200 W  
 (b) 120 W  
 (c) 80 W
4. A circuit breaker is connected:  
 (a) in parallel with the live wire  
 (b) in series with the live wire  
 (c) either (a) or (b)
5. The electrical power of an appliance depends on:  
 ① the current through the load.  
 ② the resistance of the load.  
 ③ the time it operates.  
 ④ the voltage drop across the load.  
 (a) ①, ② & ③  
 (b) ① & ④  
 (c) ② & ③

Use the following schematic circuit diagram and information to answer questions 6, 7 and 8.

$$P_2 = 48 \text{ W}$$

$$I_1 = 2 \text{ A}$$



6. What is  $R_1$ ?  
 (a) 6.0  $\Omega$   
 (b) 3.0  $\Omega$   
 (c) 2.0  $\Omega$
7. What is  $V_2$ ?  
 (a) 48 V  
 (b) 24 V  
 (c) 12 V
8. What is  $I_T$ ?  
 (a) 6.0 A  
 (b) 4.0 A  
 (c) 2.0 A
9. Choose from the descriptions below the one which would consume the most electric energy.  
 (a) A 60 W bulb left on for 80 h.  
 (b) A TV rated at 220 W used for 5 h.  
 (c) A stove of 8 kW used for 3 h.
10. What is the cost of using a refrigerator continuously for one day if it is rated at 1000 W and the cost of electricity is \$0.06/kW·h?  
 (a) 0.144¢  
 (b) 1.44¢  
 (c) \$1.44

## PART B: MATCH (5 MARKS)

Match the definition from the 1<sup>st</sup> column to the best term in the 2<sup>nd</sup> column and place the matching letter in the appropriate space on your answer sheet.

- |  |                       |
|--|-----------------------|
| 1. Reducing energy consumption by using less energy or more efficient devices. | A) circuit breaker    |
| 2. Combinations of small-scale electrical sources used in a home.              | B) conservation       |
| 3. Piece of material that melts when heated to a high temperature by current.  | C) distribution panel |
| 4. Amount of energy produced.  | D) efficiency         |
| 5. Safety switch that controls the amount of current that flows.               | E) fuse               |
|  | F) hybrid system      |
|  | G) input energy       |
|  | H) joule              |
|  | I) kilowatt hour      |
|  | J) output energy      |

PART A: MULTIPLE CHOICE (10 MARKS)

1	2	3	4	5	6	7	8	9	10
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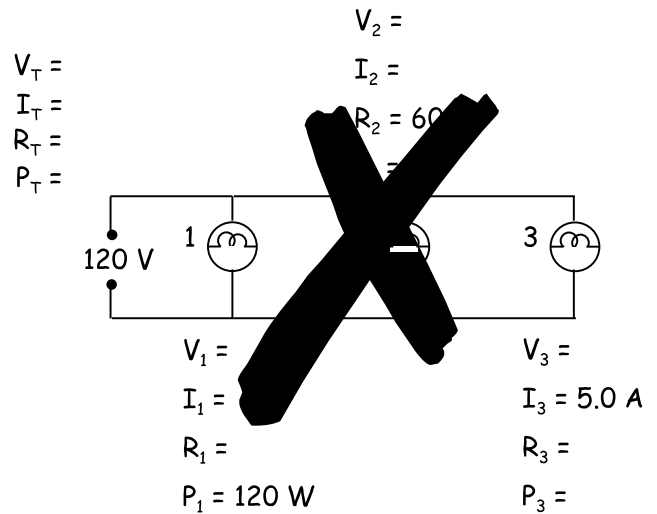
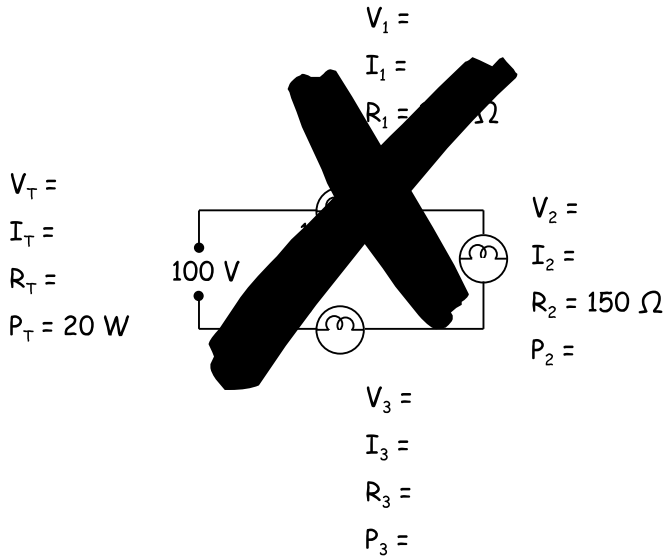
PART B: MATCH (5 MARKS)

1	2	3	4	5
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PART C: SHORT ANSWER (40 MARKS)

Answer questions 1, 2 and 3 in the space provided. Use the back of this sheet to answer question 4. Don't forget to use GRESS!

{26} 1. Determine  $V$ ,  $I$ ,  $R$ , and  $P$  for each component and the totals for the following circuit.



2. A CD player requires 240 J of energy to operate, yielding 200 J of sound energy.

{3} (a) How efficiently is the sound generated?

{1} (b) Where does the "lost" energy go?

{3} 3. If the monthly electricity bill for a household is \$25.00 how much energy in kW·h was used? Assume a unit cost of \$0.06/kW·h.

4. Suppose that 500 000 households across Canada each leave a 100 W bulb on unnecessarily for 90 h.

{4} (a) Calculate the total amount of wasted energy in kilowatt hours (kW·h).

{3} (b) Calculate the total cost of the wasted energy at \$0.20/kW·h.