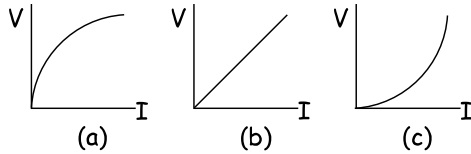


## PART A: MULTIPLE CHOICE (10 MARKS)

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

1. The graphs below show V vs I for various conductors. Which one of the graphs shows an ohmic conductor?



2. Which of the following would result in the most electrical energy being supplied to a load?  
 (a) 3 batteries (1.5 V each) connected in parallel.  
 (b) 3 batteries (1.5 V each) connected in series.  
 (c) neither (a) nor (b)

3. What is the energy released from a battery in a flashlight bulb that was switched on for 45 s, in which the voltage drop was 60 V, and the current flowing through the bulb was 0.35 A?

~~(a) 9.45 J~~                      ~~(b) 94.5 J~~  
~~(c) 945 J~~

4. Which energy source can be converted to electrical energy most efficiently?  
 (a) nuclear fuels                      (b) falling water  
 (c) fossil fuels

5. Which form of energy can electrical energy be converted into most efficiently?  
 (a) thermal energy                      (b) chemical energy  
 (c) mechanical energy

6. ~~When the potential difference is 100 V, a steady current flows in a circuit for a time of 60 s. A total of 60 kJ of energy is converted into heat. What is the current in the circuit?~~

~~(a) 0.10 A~~                      ~~(b) 1.0 A~~  
~~(c) 10 A~~

7. What form of energy from coal is used to generate the electricity in a coal burning generating station?  
 (a) nuclear energy                      (b) chemical energy  
 (c) mechanical energy

8. ~~In a magazine ad you read of 3 devices and the types of energy they convert. Which one of the pairs is not correct?~~

~~(a) photovoltaic cell                      light energy~~  
~~(b) piezoelectric cell                      pressure~~  
~~(c) alternator                      sound energy~~

9. What form of energy from the fuel is used to generate the electrical energy at the Pickering Generating Station?  
 (a) nuclear energy  
 (b) chemical energy  
 (c) mechanical energy

10. What form of energy could Prince Edward County best capture and use to make electricity?  
 (a) wind                      (b) geothermal  
 (c) biomass

## 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.

- The unit for measuring energy based on power & time (not the SI unit).
- Fuel source that constantly replenishes itself.
- The SI unit for measuring electrical power.
- The rate at which electrical energy is used.
- Consideration of all the effects of producing electricity now & in the future.

- electrical energy
- electrical power
- energy
- joules
- kilowatt hour
- nonrenewable
- photoelectric cell
- renewable
- sustainability
- watt

**PART A: MULTIPLE CHOICE (10 MARKS)**

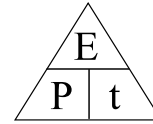
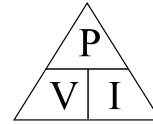
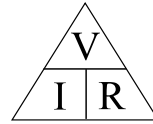
1	2	3	4	5	6	7	8	9	10
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**PART B: MATCH (5 MARKS)**

1	2	3	4	5
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**PART C: SHORT ANSWER (30 MARKS)**

Answer the following questions in the space provided.  
If more space is needed use the back of this sheet.



{9} 1. Complete the following chart. (You do NOT need to show your work for this question!)

	Voltage Drop	Current	Resistance	Power	Energy	Time
(a)	400 V	A	1000 Ω	W	320 J	s
(b)	24 V	A	Ω	180 W	J	20 s
(c)	V	0.080 A	6250 Ω	W	J	90 s

{3} 2. List the 3 primary advantages of electrical energy.

- ① \_\_\_\_\_
- ② \_\_\_\_\_
- ③ \_\_\_\_\_

{3} 3. List the 3 main electrical energy sources in Ontario.

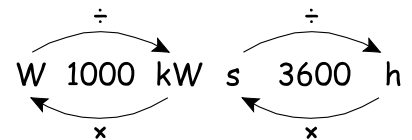
- ① \_\_\_\_\_
- ② \_\_\_\_\_
- ③ \_\_\_\_\_

{3} 4. What is the only large source of electrical energy that is produced naturally? Why don't we try to capture the electrical energy available from this source (2 reasons)?

\_\_\_\_\_

\_\_\_\_\_

5. Use GRESS and the following conversion factors to answer the following questions.



{6} (a) Calculate the power rating of an electric kettle. A current of 12.5 A flows through the heating element and the operating voltage is 120 V. Express your answer in watts (W) and kilowatts (kW).

{6} (b) Calculate the energy released by a 12 V power supply that provides a current of 2.5 A for a total time of 3.0 h. Express your answer in joules (J).