

PART A: MULTIPLE CHOICE (10 MARKS)

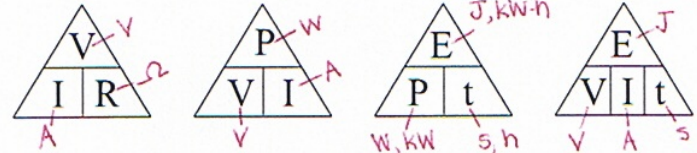
1	2	3	4	5	6	7	8	9	10
b	b	c	b	a	c	b	c	a	a

PART B: MATCH (5 MARKS)

1	2	3	4	5
E	H	J	B	I

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 V	Current I	Resistance R	Power P	Energy E	Time t
(a)	400 V	$I = V/R$ 0.4 A	1000 Ω	$P = VI$ 160 W	320 J	$t = E/P$ 2.0 s
(b)	24 V	$I = P/V$ 7.5 A	$R = V/I$ 3.2 Ω	180 W	$E = Pt$ 3600 J	20 s
(c)	$V = IR$ 500 V	0.080 A	6250 Ω	$P = VI$ 40 W	$E = Pt$ 3600 J	90 s

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

- convenient/reliable
- cheap
- easy to produce/transmit/convert
clean

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

- fossil fuel
- nuclear
- hydroelectric

{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)?

- lightning -
- too much, too fast
 - random
 - can't store energy

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).

$$I = 12.5 \text{ A}$$

$$V = 120 \text{ V}$$

$$P = VI$$

$$= (120 \text{ V})(12.5 \text{ A})$$

$$P = 1500 \text{ W} \quad \div 1000$$

$$\text{or } 1.5 \text{ kW}$$

{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).

$$V = 12 \text{ V}$$

$$I = 2.5 \text{ A}$$

$$t = 3.0 \text{ h} = 10800 \text{ s}$$

$$E = VIt$$

$$= (12 \text{ V})(2.5 \text{ A})(10800 \text{ s})$$

$$E = 324000 \text{ J}$$

t must be in "s" together E in "J"