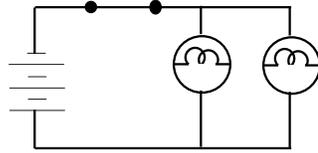


PART A: MULTIPLE CHOICE (10 MARKS)

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

1. What type of circuit is shown to the right?



- (a) series
(b) parallel
(c) both

2. Voltage is a measure of:

- (a) the resistance to the movement of charge.
(b) the energy used to move a charge past a point.
(c) the rate at which electric charge flows.

3. The unit of electric resistance is the:

- (a) ampere (A)
(b) volt (V)
(c) ohm (Ω)

4. A voltmeter is used to measure the voltage in a circuit. How is it connected?

- (a) in series
(b) in parallel
(c) it doesn't matter

5. A current of 0.080 A passing through a human body could be fatal. If you accidentally touched a 120 V supply, what skin resistance will produce a current of 0.080 A?

- (a) 0.00067 Ω
(b) 9.6 Ω
(c) 1500 Ω

6. According to the "electron-flow" convention, when electric current flows in a conductor:

- (a) protons move & electrons stay still.
(b) electrons move & protons stay still.
(c) protons & electrons move & neutrons stay still.

7. Which level of current is sometimes referred to as the "let-go threshold"?

- (a) 0.016 A
(b) 0.050 A
(c) 0.200 A

8. An ammeter is used to measure the current in a circuit. How is it connected?

- (a) in series
(b) in parallel
(c) it doesn't matter

9. A circuit in which an electrical load cannot be disconnected without affecting other loads is known as a(n):

- (a) parallel circuit.
(b) short circuit.
(c) series circuit.

10. The unit of current is the:

- (a) ampere (A)
(b) volt (V)
(c) ohm (Ω)

PART B: MATCH (5 MARKS)

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

- | | |
|---|-----------------------|
| 1. Circuit in which the electric charges do not have a choice of paths to follow. | A) conductor |
| 2. Material that "melts" when overheated. | B) fuse |
| 3. Electrical device that does not impede the flow of electrons. | C) circuit breaker |
| 4. Resistor that changes electrical resistance with temperature. | D) GFCI |
| 5. Circuit that has no load to use energy as the current flows. | E) non-ohmic resistor |
| | F) ohmic resistor |
| | G) parallel circuit |
| | H) resistor |
| | I) series circuit |
| | J) short circuit |

PART A: MULTIPLE CHOICE (10 MARKS)

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

PART B: MATCH (5 MARKS)

1	2	3	4	5
---	---	---	---	---

PART C: SHORT ANSWER (40 MARKS)

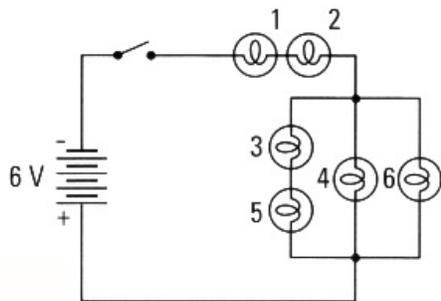
Answer questions 1 to 5 in the space provided. Answer questions 6 and 7 on the back of this sheet.

- {4} 1. What 4 basic parts are found in any simple electric circuit.
- ① _____ ③ _____
 ② _____ ④ _____

- {1} 2. Which of the components above could a circuit do without and still operate? _____

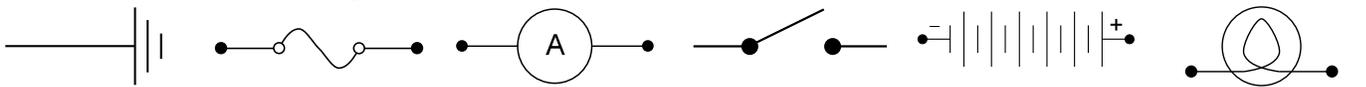
- {3} 3. What kind of electric charges move through solids to form an electric current? _____
 Why is it that only this kind of charge moves in solids?

- {5} 4. What would happen in the circuit diagram given below if each of the following were done separately:
- (a) the switch is closed. _____
 (b) the switch is closed and light bulb 2 is unscrewed. _____



- (c) the switch is closed and light bulb 3 is unscrewed. _____
 (d) the switch is closed and light bulb 4 is unscrewed. _____
 (e) the switch is closed, and light bulb 6 is removed and replaced by a copper wire. _____

- {6} 5. Label each of the following electrical components. Be sure to use their correct name!



- (a) _____ (b) _____ (c) _____ (d) _____ (e) _____ (f) _____

- {6} 6. Draw a schematic circuit diagram showing a 120 V source of electrical energy and two light bulbs connected in series, which in turn are connected to two light bulbs and a motor which are all connected in parallel with each other. The complete circuit is controlled by a switch and is protected by a fuse (~). An ammeter is connected to measure the current through the motor and a voltmeter measures the 120 V supply.

7. Use GRESS and the formula triangle to answer the following questions. Be sure to express the your final answers to one decimal place each!



- {5} (a) 2.3 A is required to operate a coffee grinder. What is its resistance if the supply voltage is 110 V?
 {5} (b) Calculate the current flowing through a 250 Ω resistor that is connected to a 120 V source.
 {5} (c) A light bulb has 2.4 A flowing through it. The resistance of the bulb is 14.2 Ω. Calculate the voltage drop across the light bulb.