

Grade 9 – Unit 4

Electrical Principles and Technologies

Topic 2 - Technologies can be used to transfer and control electrical energy

Name _____

Class _____

- Electricity can be conducted by a gas. A good example of this is neon, which glows
 - purple
 - orange-pink**
 - yellowish-white
 - red
- These types of conductors have no resistance to electron flow and therefore are considered to be perfect conductors. They are ...
 - metallic conductors
 - magnetic conductors
 - superconductors**
 - superior conductors
- A door can be used as a model to show how difficult it would be for electrons to flow. The door model represents ...
 - voltage
 - current
 - resistance**
 - amperage
- Solutions can also be resistors. The more charged particles in a solution,
 - the more molecules it has
 - the more resistance it has
 - the less resistance it has**
 - the fewer molecules it has
- A lie detector indicates that a person is telling a lie because there is
 - a decrease in resistance**
 - an increase in resistance
 - no change in conductivity
 - a decrease in conductivity
- A variable resistor is a control device that allows you to change the resistance in a circuit. It is also called a
 - rheohm
 - rheostat**
 - thermostat
 - thermocouple
- A waterfall can be used to model current, voltage and resistance. If the waterfall has a large number of very large boulders, it models greater ...
 - voltage
 - current
 - amperage
 - resistance**

8. A certain condition needs to be met in order to prove the mathematical link between voltage, current and resistance as represented by Ohm's Law. The condition is that

- A. **temperature must be constant**
- B. measurement must be accurate
- C. calculations must be precise
- D. resistance must be created

9. Using Ohm's Law ($R = V / I$) calculate how much current is created when a **30 V** battery creates the current through a **15 Ω** resistor. Use this shortcut formula to solve the problem

- A. 0.5 A
- B. **2 A**
- C. 45 A
- D. 1.5 A

$$\frac{V}{R I}$$

10. Voltage is the potential difference across two points. Many electricians refer to the potential difference across a resistor or device as ...

- A. micrometer
- B. **voltage drop**
- C. resistance
- D. voltmeter

11. Current is the rate of flow of charged electrons in a conductor, and is measured in ...


- A. **amperes**
- B. volts
- C. ohms
- D. milli-volts

12. Resistance varies with the length, length and thickness of the wire used for resistance. In general, resistance increases as the

- A. **length and thickness increases**
- B. length and thickness decreases
- C. length increases and thickness decreases
- D. length decreases and the thickness increases

13. Every circuit has four basic parts. The component that controls the flow of the electricity is the ...

- A. source
- B. conductor
- C. **switch**
- D. resistance, or load

14. Symbols are used to represent the electrical components in a schematic diagram. This symbol  is used to represent ...

- A. amps
- B. automatic
- C. **ammeter**
- D. a single cell

15. A circuit that has only one pathway for the electricity to flow is called a
- A. series circuit**
 - B. parallel circuit**
 - C. integrated circuit**
 - D. schematic circuit**
16. In a parallel circuit, when additional resistors are added, the total resistance of the circuit is
- A. unchanged**
 - B. increased**
 - C. decreased**
 - D. doubled**
17. Solid state components are used in many electronic devices. These are made from a solid material that has no moving parts. They are also called ...
- A. resistors**
 - B. transistors**
 - C. micro-components**
 - D. photo-conductors**
18. A microcircuit is also called an integrated circuit because they are made up of microscopic
- A. cells and batteries**
 - B. conductors and**
 - C. series and parallel circuits**
 - D. transistors and resistors**

Bonus Question (use the space below)

Draw a **schematic** diagram using: 2 batteries, 2 lamps (in parallel), 1 motor, 4 switches
The circuit you make should enable each lamp and the motor to be switched on and off separately, without affecting the other loads, and also allow for all of the loads to be turned on and off all at once.