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## Introduction to Safety – Unit Five: Electrical Safety

### Unit Exam Answer Key

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- Which of the following is considered a secondary energy source?
  - Natural gas
  - \*\* Electricity**
  - Nuclear power
  - Coal
- The \_\_\_\_\_ orbits the nucleus of an atom
  - \*\* electron**
  - proton
  - neutron
  - nucleus
- An atom with how many electrons in its outer shell is the best conductor of electricity?
  - 0
  - \*\* 1**
  - 4
  - 8
- When a balanced atom loses an electron it becomes a \_\_\_\_\_ ion.
  - Negative
  - \*\* positive**
- Current can exist without voltage.
  - True
  - \*\* False**
- Current is the movement of \_\_\_\_\_.
  - \*\* electrons**
  - protons
  - neutrons
  - All of the above
- A \_\_\_\_ produces electricity using pressure.
  - generator
  - \*\* piezoelectric device**
  - thermocouple
  - photovoltaic





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8. \_\_\_\_ is an example of a control device in an electrical circuit.
- \*\* switch**
  - lightbulb
  - battery
  - wire
9. The letter \_\_\_\_ is used to represent current flow in a circuit.
- \*\* I**
  - C
  - R
  - P
10. The symbol  $\Omega$  is used to represent resistance in an electrical circuit.
- \*\* True**
  - False
11. Which factor will cause the resistance of a wire to increase?
- decrease in its length
  - an increase in its diameter
  - \*\* an increase of its temperature**
  - using silver instead of copper
12. When a switch is in a position that causes current to flow, the circuit in which it is connected is open.
- True
  - \*\* False**
13. A grounding device \_\_\_\_.
- \*\* acts as if it conducts electricity**
  - is a power source
  - acts the same as a circuit breaker
  - is considered a loading device
14. A \_\_\_\_ responds to excessive current more quickly than a \_\_\_\_ in response to excessive current conditions.
- \*\* fuse, circuit breaker**
  - circuit breaker, fuse
  - human, fuse
  - human, circuit breaker





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15. The term \_\_\_\_\_ proportional refers to the value of one quantity affecting value of another the same way by the same ratio.
- \*\* directly**
  - inversely
16. If V doubles, I halves if R is not changed.
- True
  - \*\* False**
17. The resistance in the circuit is how many ohms when the applied voltage is 18 volts and the current is 20mA?
- \*\* 90Ω**
  - 360Ω
  - 900Ω
  - 3.6Ω
18. The voltage of a circuit is \_\_\_\_\_ volts when its resistance is 10k ohms and the current is 500uA.
- \*\* 5**
  - 50
  - 500
  - 2000
19. The sum of the currents through all of the components in a series circuit equal total current.
- True
  - \*\* False**
20. Which statement is true about a parallel circuit?
- A parallel circuit is configured so that current has **one** or more paths for current to flow.
  - \*\* The total current in a parallel circuit is equal to the sum of the branch currents.**
  - In a parallel circuit the current in each branch is directly proportional to the resistance of the branch.
  - The source voltage is equal to the sum of all the voltage drops across each branch in a parallel circuit





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21. The horizontal axis of a sine wave indicates \_\_\_\_\_.  
a. polarity  
b. voltage amplitude  
c. current amplitude  
d. **\*\* frequency**
22. If the current is at a greater level than what the wire conductor is it is designed for, it could \_\_\_\_\_.  
a. overheat and open  
b. cause a short  
c. overheat and start a fire  
d. **\*\* Any of the above**
23. Electrical current takes the path of least resistance.  
a. **\*\* True**  
b. False
24. According to the NEC (National Electrical Code) a voltage greater than \_\_\_\_\_ volts is defined as *High Voltage*.  
a. 120  
b. 230  
c. 460  
d. **\*\* 600**
25. A current as low as \_\_\_\_\_ can cause cardiac arrest.  
a. **\*\* 100 milliamps**  
b. 1 amp  
c. 5 amps  
d. 10 amps
26. The real measure of the intensity of an electrical shock lies in the amount of \_\_\_\_\_.  
a. voltage  
b. **\*\* amps forced through the body**
27. Ventricular fibrillation is the \_\_\_\_\_.  
a. stoppage of the heart  
b. **\*\* loss of regular heart rhythm**  
c. Both a and b  
d. Neither a or b





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28. Current cannot flow through a substance that is considered an extremely poor conductor, even if the voltage is great enough.
- True
  - \*\* False**
29. Static electricity \_\_\_\_\_ flow in a circuit.
- does
  - \*\* does not**
30. \_\_\_\_\_ are used to minimize the build-up of static electricity.
- Grounding pads
  - Grounded wristbands
  - Rubber floor mats
  - \*\* All of the above**



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PAGE 6 of 6

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