

Chapter 1—Residential Workplace Safety

TRUE/FALSE

1. The resistance of the human body remains the same, regardless of conditions.

ANS: F PTS: 1

2. Copper is not a conductor of electricity, because only materials that are magnetic can conduct electricity.

ANS: F PTS: 1

3. The National Electrical Code gives minimum safety standards for electrical work and is not intended to be a "How To" manual.

ANS: T PTS: 1

4. If a 120 volt branch circuit is feeding a load that has 20 ohms of resistance, the amount of current flowing on the circuit will be 7 amps.

ANS: F
 $120\text{v} / 20 \text{ ohms} = 6 \text{ amps}$

PTS: 1

5. A current of 0.12 ampere is enough to give an electrician a shock that is sufficient to cause her breathing to stop.

ANS: T PTS: 1

6. Many employers around the country require workers to have the OSHA 10 or OSHA 30 card before they are hired.

ANS: T PTS: 1

7. Always wear the proper personal protective equipment and test the equipment for voltage before working on electrical equipment.

ANS: T PTS: 1

MULTIPLE CHOICE

1. The unit of measure for electrical current flow is the _____.
a. ampere
b. ohm
c. volt
d. watt

ANS: A PTS: 1

2. Which of the following materials is not considered to be a conductor?

- a. Aluminum
- b. Copper
- c. Glass
- d. None of the these

ANS: C PTS: 1

3. The force that causes electrons to move from atom to atom in a conductor is called _____.
- a. amperage
 - b. ohms
 - c. voltage
 - d. watts

ANS: C PTS: 1

4. Which of the following materials are considered to be insulators?
- a. Plastic
 - b. Porcelain
 - c. Rubber
 - d. All of the above

ANS: D PTS: 1

5. According to Ohm's law, _____.
- a. $\text{Voltage} = \text{Current} / \text{Resistance}$
 - b. $\text{Current} = \text{Voltage} / \text{Resistance}$
 - c. $\text{Voltage} = \text{Resistance} / \text{Current}$
 - d. $\text{Resistance} = \text{Current} \times \text{Voltage}$

ANS: B PTS: 1

6. One milliamp (mA) equals _____.
- a. .1 ampere
 - b. .01 ampere
 - c. .001 ampere
 - d. .0001 ampere

ANS: C PTS: 1

7. The National Electrical Code is published by the _____.
- a. National Electrical Manufacturers Association
 - b. National Fire Protection Association
 - c. Occupational Safety and Health Administration
 - d. Underwriters Laboratories

ANS: B PTS: 1

8. Which of the following do NOT require GFCI protection?
- a. All 125V, 15- and 20-amp bathroom receptacles
 - b. All 125V, 15- and 20-amp outdoor receptacles
 - c. All 125V, 15- and 20-amp receptacles that serve kitchen countertops
 - d. All 125V, 15- and 20-amp receptacles in living rooms

ANS: D PTS: 1

9. Grounding and Bonding is covered in Article _____ of the National Electrical Code.

- a. 210
- b. 250
- c. 110
- d. 100

ANS: B PTS: 1

10. The _____ wire of an electrical circuit is connected to the non-current-carrying metal parts of electrical equipment.
- a. bare
 - b. black
 - c. green
 - d. white
 - e. A and C only

ANS: E PTS: 1

11. The Code of Federal Regulations is published and administered by _____.
- a. NFPA
 - b. OSHA
 - c. UL
 - d. None of the above

ANS: B PTS: 1

12. Worksite lock-out/tag-out procedures are established by _____.
- a. the company you work for
 - b. UL
 - c. NFPA
 - d. OSHA

ANS: A PTS: 1

13. Fall protection must be used whenever workers are on a walking or work surface that is _____ feet or higher and has unprotected sides.
- a. 4
 - b. 6
 - c. 8
 - d. 10

ANS: B PTS: 1

14. When placing a straight or extension ladder against a wall, the bottom of the ladder should be placed approximately _____ of the vertical height from the wall.
- a. 1/5
 - b. 1/4
 - c. 1/3
 - d. 1/2

ANS: B PTS: 1

15. A straight or extension ladder should extend at least _____ above the top support when placed against a structure that is not as tall as the ladder.
- a. 12"
 - b. 18"
 - c. 24"

d. 36"

ANS: D PTS: 1

16. Scaffold planks must be secured and must extend over the end supports at least _____ inches but not more than _____ inches.

a. 6, 24
b. 12, 24
c. 6, 18
d. 6, 12

ANS: D PTS: 1

17. Fires that occur with flammable liquids, such as gasoline, oil, grease, paints, and thinners are Class _____ fires.

a. A
b. B
c. C
d. D

ANS: B PTS: 1

18. Dry chemical fire extinguishers can be used on Class _____ fires.

a. A
b. B
c. C
d. All of the above

ANS: D PTS: 1

19. The amount of current that it takes to cause ventricular fibrillation is _____ milliamperes.

a. 5
b. 6 - 30
c. 50 - 150
d. 1000 - 4300

ANS: D PTS: 1

20. Which of the following types of fire extinguishers should be used on electrical fires?

a. Carbon Dioxide
b. Pressurized water
c. Dry Chemical
d. either a or c

ANS: D PTS: 1

21. Fires that occur in or near electrical equipment such as motors, switchboards, and electrical wiring are classified as Class _____ fires.

a. A
b. B
c. C
d. D

ANS: C PTS: 1

22. The National Electrical Code is revised every _____ years to reflect the latest changes and trends in the electrical industry.
- a. 2
 - b. 3
 - c. 4
 - d. 5

ANS: B PTS: 1

23. The National Electrical Code chapter that covers Wiring Methods and Materials is _____.
- a. Chapter 1
 - b. Chapter 2
 - c. Chapter 3
 - d. Chapter 5

ANS: C PTS: 1

24. Changes to the National Electrical Code from the previous edition are indicated by grey highlighting or a _____ beside the table or figure in which the change has occurred.
- a. asterisk
 - b. star
 - c. bullet
 - d. vertical solid line

ANS: D PTS: 1

25. Which of the following items is considered to be Personal Protective Equipment (PPE)?
- a. safety glasses
 - b. hard hat
 - c. work boots
 - d. all of the above

ANS: D PTS: 1

26. A dangerous condition associated with the possible release of energy caused by an electric arc is called a/an _____.
- a. arc blast
 - b. arc-flash
 - c. electrical hazard
 - d. volt

ANS: B PTS: 1

27. When an electric current arcs through the air, the temperature can reach as high as _____ degrees Fahrenheit.
- a. 1,000
 - b. 10,000
 - c. 25,000
 - d. 35,000

ANS: D PTS: 1

28. A(n) _____ is defined as a device intended to provide protection from the effects of arc faults and to de-energize a circuit when an arc fault is detected.
- a. arc-fault circuit-interrupter
 - b. ground-fault circuit-interrupter

- c. circuit breaker
- d. fuse

ANS: A

PTS: 1

COMPLETION

1. A two-pronged plug that distinguishes between the grounded conductor and the 'hot' conductor by having a grounded conductor prong that is wider than the 'hot' conductor prong is called a(n) _____ plug.

ANS: polarized

PTS: 1

2. According to Ohm's law, a 120 volts banch circuit with a total circuit resistance of 15 ohms will have a current flow of _____ amps.

ANS:

8

eight

PTS: 1

3. All electrical equipment and conductors are to be considered _____ until determined to be otherwise by testing methods.

ANS:

energized

hot

live

PTS: 1

4. All employees who are exposed to hazardous conditions such as falling objects, electrical hazards, or burns are required to wear _____ on the job site.

ANS:

personal protective equipment

PPE

PTS: 1

5. _____ are designed to inform a worker of a material's physical properties, its effects on health, the proper type and style of protective equipment needed when using the material, and the proper first aid treatment to be given when exposed to the material.

ANS:

Safety Data Sheets

SDS

PTS: 1

6. The three components that must be present for a fire to start and sustain itself are _____, _____, and _____.

ANS:

fuel, heat, oxygen
fuel, oxygen, heat
oxygen, fuel, heat
oxygen, heat, fuel
heat, oxygen, fuel
heat, fuel, oxygen

PTS: 1

7. When an arc occurs, explosive expansion causes molten metal to be thrown through the air and onto the skin or into the eyes of an electrical worker. The high pressure that results from a/an _____ can rupture eardrums and knock people off ladders and scaffolding.

ANS: arc-blast

PTS: 1

8. The purpose of _____ is to provide a practical safe working area for employees relative to the hazards arising from the use of electricity, and it addresses electrical safety concerns in all of the places that the National Electrical Code addresses safe installation practices, including residential construction.

ANS: NFPA 70E

PTS: 1

SHORT ANSWER

1. The type of PPE that an electrical worker needs to wear depends on the Hazard/Risk Category. If the Hazard/Risk Category is a 1, name at least four of the PPE you need to wear:
_____, _____, _____, and _____.

ANS:

Flame-resistant (FR) clothing, arc-rated long sleeve shirt, arc-rated pants, arc-rated face shield, hard hat, safety glasses, hearing protection, leather gloves, and leather work shoes

PTS: 1

2. Explain the purpose of Safety Data Sheets.

ANS:

Lists and explains each of the hazardous materials that an electrician may work with so they can safely use the material and respond to an emergency situation.

PTS: 1

3. Explain what the gray highlighting of certain parts of the NEC means.

ANS:

A change has occurred in that part from the previous NEC.

PTS: 1

4. Explain why it is a good idea for an electrician to wear safety shoes with a non-conductive toe on the job site.

ANS:

The metal of steel-toe shoes can become exposed and present a safety hazard around energized equipment.

PTS: 1

5. Explain the proper way to lift an object.

ANS:

Have solid footing

Stand close to the load

Bend your knees

Lift with your legs, not your back

PTS: 1

6. When using a fire extinguisher, describe what each letter stands for in the acronym "PASS."

ANS:

'P' is to remind you to pull the pin at the top of the extinguisher to allow the handle to be squeezed. 'A' is to remind you to aim the nozzle of the fire extinguisher at the base of the fire. 'S' is to remind you to squeeze the handle to discharge the extinguisher from a distance of 6 - 8 feet. The second 'S' is to remind you to sweep the nozzle back and forth at the base of the fire until it is extinguished.

PTS: 1