

## REEDY-JUNIOR COSMETOLOGY- OFF-SITE LEARNING PACKET DAY 9

1. PLEASE READ THE SUMMARY AND QUESTIONS PAGE FIRST
2. COMPLETE THE WORK SHEETS AND VOCABULARY WHERE IT PERTAINS.  
YOU MAY GOOGLE AND REFERENCE THE MILADY WEB SITE FOR  
VOCABULARY WORDS. NOT ALL ASSIGNMENTS CONTAIN VOCABULARY, OR  
WORK SHEETS. THEY MAY BE SLIGHTLY DIFFERENT.
3. COMPLETE THE PRACTICE TESTS TO THE BEST OF YOUR ABILITY.
4. YOU MAY USE YOUR MILADY OR COURSEMATE ONLINE PROGRAM TO  
ASSIST YOU IN ANY WAY.
5. PLEASE PUT YOUR NAME ON EVERY PAGE YOU HAVE COMPLETED.

- d. Green light LED reduces hyperpigmentation
- e. Blue light LED is used for precancerous lesions
- 2. Light therapy contraindications
  - a. Light sensitivities
  - b. Phototoxic reactions
  - c. Is taking antibiotics
  - d. Has cancer or epilepsy
  - e. Is pregnant
  - f. Is under a physician's care

## G. INTENSE PULSE LIGHT

**Intense pulse light** is a medical device that uses multiple colors and wavelengths (broad spectrum) of focused light to treat spider veins, hyperpigmentation, rosacea and redness, wrinkles, enlarged hair follicles and pores, and excessive hair. *As with most devices, multiple treatments are required. These treatments are provided only under the supervision of a qualified physician.*

## SUMMARY AND REVIEW

- Because many of the devices and pieces of equipment we use in beauty services are electrical, it is important to have a general understanding of the basics of electricity.
- We can not perform various skin care services safely and effectively without understanding which form of electrical current will give the best results for the desired service.

## ✓ CHAPTER REVIEW QUESTIONS AND ANSWERS:

1. Define electric current.

**Answer:** Electric current is the flow of electricity along a conductor.

*Note: The answer to this question can be found on page 274 of Milady Standard Cosmetology.*

2. Explain the difference between a conductor and a nonconductor (insulator).

**Answer:** A conductor is any substance that conducts electricity, such as metal, copper, or ordinary water. A nonconductor, or insulator, is a material that does not transmit electricity easily, such as rubber, silk, wood, glass, and cement.

*Note: The answer to this question can be found on page 274 of Milady Standard Cosmetology.*

3. Describe the two types of electric current and give examples of each.

**Answer:** The two types of current are as follows.

- Direct current (DC) is a constant, even-flowing current that travels in one direction only. Examples are flashlights, mobile telephones, and cordless hairstyling tools. All use batteries.
- Alternating current (AC) is a rapid and interrupted current, flowing first in one direction and then in the opposite direction. Examples are corded hair dryers, curling irons, electric files, and table lamps. All plug into a wall outlet and use alternating current.

*Note: The answer to this question can be found on page 275 of Milady Standard Cosmetology.*

4. Explain the difference between a volt and an amp.

**Answer:** The difference between a volt and an amp is that a volt is the unit that measures the pressure or force that pushes electricity through a conductor. An amp is the unit that measures the strength of an electric current.

*Note: The answer to this question can be found on page 276 of Milady Standard Cosmetology.*

5. Define ohm.

**Answer:** An ohm is a unit that measures the resistance of an electric current. Current will not flow through a conductor unless the force (volts) is stronger than the resistance (ohms).

*Note: The answer to this question can be found on page 277 of Milady Standard Cosmetology.*

6. Define watt and kilowatt.

**Answer:** A watt is a measurement of how much electric energy is being used in one second. A kilowatt (K) is 1,000 watts.

*Note: The answer to this question can be found on page 277 of Milady Standard Cosmetology.*

7. Explain the function of a fuse.

**Answer:** A fuse prevents excessive current from passing through a circuit. It is designed to blow out or melt when the wire becomes too hot from overloading the circuit with too much current, such as when too many appliances or faulty equipment are connected to an electricity source.

*Note: The answer to this question can be found on page 278 of Milady Standard Cosmetology.*

8. What is the purpose of a circuit breaker?

**Answer:** A circuit breaker is a switch that automatically interrupts or shuts off an electric circuit at the first indication of an overload. Circuit breakers have replaced fuses in modern electric circuits. They have all the safety features of fuses but do not require replacement and can simply be reset.

*Note: The answer to this question can be found on page 278 of Milady Standard Cosmetology.*

9. What is the purpose of grounding?

**Answer:** The purpose of grounding is to complete an electric circuit and carry the current safely away.

*Note: The answer to this question can be found on page 278 of Milady Standard Cosmetology.*

10. List at least five steps to take for electrical safety.

**Answer:** Steps to take for electrical safety are as follows:

- All the electrical appliances you use should be UL certified.
- Read all instructions carefully before using any piece of electrical equipment.
- Disconnect all appliances when not in use.
- Inspect all electrical equipment regularly.
- Keep all wires, plugs, and electrical equipment in good repair.
- Use only one plug for each outlet; overloading may cause the circuit breaker to pop. If more than one plug is needed in an area, use a power strip with a surge protector.
- Avoid contact, for both you and your client, with water and metal surfaces when using electricity, and do not handle electrical equipment with wet hands.
- Do not leave your client unattended while connected to an electrical device.
- Keep electrical cords off the floor and away from people's feet; getting tangled in a cord could cause you or your client to trip.
- Do not attempt to clean around electric outlets while equipment is plugged in.
- Do not touch two metal objects at the same time if either is connected to an electric current.
- Do not step on or place objects on electrical cords.
- Do not allow electrical cords to become twisted; this can cause a short circuit.
- Disconnect appliances by pulling on the plug, not the cord.
- Do not attempt to repair electrical appliances unless you are qualified. Take them to a repair store.

*Note: The answer to this question can be found on page 279 of Milady Standard Cosmetology.*

11. List and describe the three main electric modalities (currents) used in cosmetology.

**Answer:** The three main electrical modalities (currents) used in cosmetology are:

- Galvanic current: this is a constant and direct current. It has a positive and negative pole and produces chemical changes when it passes through the tissues and fluids of the body.
- Microcurrent is an extremely low level of electricity that mirrors the body's natural electrical impulses. Microcurrent can be used for iontophoresis, firming, toning, and soothing skin. It also can help heal inflamed tissue such as acne.
- Tesla high-frequency current: this is a thermal or heat-producing current with a high rate of oscillation or vibration. It is commonly called violet ray and is used for scalp and facial treatments. It does not produce muscle contractions. The effects of this type of current can be either stimulating or soothing, depending on the method of application.

*Note: The answer to this question can be found on pages 280–282 of Milady Standard Cosmetology.*

12. What are electromagnetic spectrum of radiation and visible light?

**Answer:**

- Electromagnetic spectrum or electromagnetic spectrum of radiation is the name given to all of the forms of energy (or radiation) that exist. It carries, or radiates, energy through space on waves (radio waves, microwaves and light waves). These waves are similar to those caused when a stone is dropped on the surface of water.
- Visible light is the primary source of light used in facial and scalp treatments. It can be seen. Visible light makes up 35 percent of natural sunlight.

*Note: The answer to this question can be found on pages 283–284 of Milady Standard Cosmetology.*

13. List and describe the two main types of light therapy.

**Answer:** The two main types of light therapy are:

- Infrared light: this makes up 60 percent of natural sunlight. It has longer wavelengths, penetrates the deepest, has less energy, and produces more heat than visible light.
- Ultraviolet (UV) light: UV light is also referred to as cold light or actinic light and makes up five percent of natural sunlight. UV light is the least penetrating, produces chemical effects, kills germs, and prompts skin to produce vitamin D.

*Note: The answer to this question can be found on pages 285–286 of Milady Standard Cosmetology.*

14. What are the benefits of LED therapies?

**Answer:** They emit light onto the skin to stimulate specific responses at precise depth of the skin tissue. They can reduce acne, improve collagen and elastin production, and reduce hyperpigmentation.

*Note: The answer to this question can be found on page 287 of Milady Standard Cosmetology.*

15. Identify the colors of LED lights and their wavelengths (nm)?

**Answer:** Blue light: 570 nm

- Red light: 640 nm
- Yellow light: 590 nm
- Green light: 525 nm

*Note: The answer to this question can be found on page 287 of Milady Standard Cosmetology.*

16. Name two important precautions to observe when using light therapy.

**Answer:** Two important precautions to observe when using light therapy are:

1. Avoid overexposure to UV rays. It can produce painful burns and blistering, increase the risk of skin cancer, and cause premature aging.

2. Always be certain that you are in compliance with your state's regulations for the licensing and use of laser and light therapy devices.

*Note: The answer to this question can be found on pages 285 and 287 of Milady Standard Cosmetology.*

## LEARNING REINFORCEMENT IDEAS AND/OR ACTIVITIES

1. Have students complete Chapter 13 of the *Milady Standard Cosmetology Theory Workbook*, *Practical Workbook*, and *Study Guide: The Essential Companion*.
2. Have students complete review and final testing with *Milady Standard Cosmetology Online Licensing Preparation*.
3. Have students complete scenario-based questions in Chapter 13 of *Situational Problems for Milady Standard Cosmetology*.
4. The "Who Am I" activity is designed to increase students' command of the terms used in this lesson. The instructor will create identity sheets for each student using terms presented in this lesson such as: direct current, alternating current, conductor, insulator, galvanic current, volt, amp, ohm, watt, kilowatt, ultraviolet rays, violet ray, converter, rectifier, light therapy, and so on. Issue an identity sheet to each student, who will tape it to the back of another student using masking tape without the receiving student knowing what term it contains. Instruct students that they can ask five questions about their own identity that can be answered with a yes or no response. The object is to guess their identity within the five questions. The students should go to more than one individual to ask the five questions. As each question is asked, the student answering makes a mark on their sheet to indicate one question has been asked. The students may guess who they think they are at any time prior to question five. Ask students to sit down as soon as they have guessed correctly or they have asked all five questions. Summarize by seeing how many were able to guess their identity within two or three questions. After learning which terms gave the most trouble, offer a quick review of the terms.
5. Assign students a 250-word research paper on the history of electricity for extra credit. Allow the author of the best essay to read to a later class.
6. Have students view the fuse box or breaker box in your school and, if it is not already labeled, label each fuse or breaker with the equipment or area it controls.
7. Have students identify the electrical load that a particular breaker or fuse can handle in the school. Have them determine what equipment is running on it and the load that it creates on the breaker or fuse.
8. Have students research and describe a situation in your school which could cause an overloaded circuit. Have them explain how that problem can be avoided and what is needed to correct it.
9. Have students develop a procedure sheet on the safe handling of each piece of electrical equipment used in the school. Retain them for use with future classes.
10. Have students do a brief research paper on what to do in the event of an electrical fire.
11. Invite a science teacher or electrician to do a class experiment with electrical currents.
12. In the space below, write any activities, assignments, or ideas that have been used effectively with this lesson in order to aid other instructors who may use this lesson plan in the future.

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

✓ TEST—CHAPTER 13—BASICS OF ELECTRICITY

1. An insulator or \_\_\_\_\_ is a substance that does not easily transmit electricity.
 

a. vaporizer	c. nonconductor
b. metal	d. water
  
2. What electrical term is abbreviated as AC?
 

a. Alternating current	c. Active current
b. Ampere current	d. Anaphoresis current
  
3. What apparatus changes alternating current (AC) to direct current (DC)?
 

a. Inductor	c. Generator
b. Rectifier	d. Transformer
  
4. The term used for measuring the strength of an electric current is \_\_\_\_\_.
 

a. wattage	c. ampere
b. voltage	d. ohm
  
5. What unit of measure is equivalent to 1/1,000 of an ampere?
 

a. Microampere	c. Kiloampere
b. Milliampere	d. Centiampere
  
6. The term used for measuring the resistance of an electric current is \_\_\_\_\_.
 

a. wattage	c. ampere
b. voltage	d. ohm
  
7. The term used for measuring how much electric energy is being used in one second is \_\_\_\_\_.
 

a. watt	c. ampere
b. voltage	d. ohm
  
8. Which safety devices prevent the overheating of electric wires?
 

a. Fuses and busters	c. Circuit breakers and volts
b. Fuses and circuit breakers	d. Fuses and conductors
  
9. Which apparatus conducts electric current from an electrotherapy device to the client's skin?
 

a. Moderator	c. Electrode
b. Converter	d. Rectifier
  
10. A positive electrode is called a(n) \_\_\_\_\_.
 

a. anode	c. anion
b. cathode	d. cation
  
11. Commonly used modalities in cosmetology are Tesla high-frequency current, microcurrent, and \_\_\_\_\_.
 

a. electrode	c. cathode
b. galvanic current	d. anode

12. The process of introducing water-soluble products into the skin with the use of electric current is known as \_\_\_\_\_.
- a. iontophoresis
  - b. desincrustation
  - c. megaphoresis
  - d. cataphoresis
13. What process forces acidic substances into deeper tissues using galvanic current from the positive toward the negative pole?
- a. Anaphoresis
  - b. Betaphoresis
  - c. Megaphoresis
  - d. Cataphoresis
14. The process used to soften and emulsify grease deposits and blackheads in the hair follicles is called \_\_\_\_\_.
- a. iontophoresis
  - b. desincrustation
  - c. cataphoresis
  - d. anaphoresis
15. An extremely low level of electricity that mirrors the body's natural electricity impulses is known as \_\_\_\_\_.
- a. galvanic current
  - b. Tesla high-frequency current
  - c. microcurrent
  - d. direct current
16. What is a thermal or heat-producing current with a high rate of oscillation or vibration that is commonly used for scalp and facial treatments?
- a. Direct ray
  - b. Indirect ray
  - c. Violet ray
  - d. White ray
17. An instrument producing moist, uniform heat that can be applied to the head or face is called a \_\_\_\_\_.
- a. plastic cap
  - b. heating cap
  - c. steamer
  - d. humidifier
18. The distance between two successive peaks of electromagnetic waves is called \_\_\_\_\_.
- a. frequency length
  - b. wavelength
  - c. low frequency
  - d. wave distance
19. Thirty-five percent of natural sunlight is made up of \_\_\_\_\_.
- a. therapeutic light
  - b. ultraviolet light
  - c. visible light
  - d. infrared light
20. Ultraviolet rays, also known as cold light, make up \_\_\_\_\_ percent of natural light.
- a. 5
  - b. 10
  - c. 30
  - d. 60
21. The type of light blocked by the ozone layer is \_\_\_\_\_.
- a. UBA
  - b. UVB
  - c. UVC
  - d. ULV
22. Infrared lamps are primarily used during hair conditioning treatments and to \_\_\_\_\_.
- a. remove wrinkles
  - b. increase circulation
  - c. diminish lesions
  - d. process haircolor

- 23. Laser is the acronym for \_\_\_\_\_.
  - a. Laser Amplification Stimulation Emission of Radiation
  - b. Light Amplification Stimulation Emission of Radiation
  - c. Light Advancement Synchronous with Effective Rays
  - d. Laser Administered with Structured Electric Radar
  
- 24. Removing blood vessels, disabling hair follicles, and eliminating some wrinkles may be accomplished using various \_\_\_\_\_ treatments.
  - a. UVB rays
  - b. UVA rays
  - c. Tesla
  - d. laser
  
- 25. LED is the abbreviated version of \_\_\_\_\_, which is used in treatments to reduce acne and increase skin circulation.
  - a. light-efficient diode
  - b. long-electric diode
  - c. light-emitting diode
  - d. laser-effective desincrustation