

SUBJECT: BASICS OF CHEMISTRY

LESSON OBJECTIVES:

- Define the nature of electricity and the two types of electric current
- Define electrical measurements
- Understand the principles of electrical equipment safety
- Define electric modalities used in cosmetology
- Explain electromagnetic radiation and the visible spectrum of light
- Describe the types of light therapy and their benefits

Inspirational thought for the day: “Competition is a by-product of productive work, not its goal. A creative man is motivated by the desire to achieve, not the desire to beat others.” – Ayn Rand

I) ELECTRICITY

- A) Electric Current
- B) Conductor
- C) Insulator
 - 1) Rubber
 - 2) Silk
 - 3) Wood
 - 4) Glass
 - 5) Cement
- D) Complete circuit

II) TYPES OF ELECTRICITY CURRENT

- A) Direct Current (DC)
- B) Alternating Current (AC)
- C) Converters
- D) Rectifiers
- E) Electrical measurements
 - 1) Volt (V)
 - 2) Ampere (A)
 - 3) Milliampere
 - 4) Ohm (O)
 - 5) Watt (W)
 - 6) Kilowatt (K)

F) Safety Devices

- 1) Fuse
- 2) Circuit Breaker

G) Electrical Equipment Safety

- 1) Inspect regularly
- 2) Never overload circuits
- 3) Check of UL approval
- 4) Ensure appliances are grounded

H) Hints for Safety

- 1) Ensure UL certification
- 2) Read instructions on equipment use
- 3) Disconnect appliances when not in use
- 4) Inspect equipment regularly
- 5) Keep wires, plugs, equipment in good repair
- 6) Use on plug per outlet
- 7) Avoid contact with water or metal when using electricity (you and client)

- 8) Don't leave room when client is connected to any electrical device
- 9) Keep cords off floor and away from feet
- 10) Don't attempt to clean around electric outlet while equipment is plugged in.
- 11) Don't touch two metallic objects at same time if either is connected to current
- 12) Don't step on or set objects on electrical cords
- 13) Don't allow cords to become twisted or bent
- 14) Disconnect appliance by pulling plug, not cord
- 15) Don't repair electrical appliances unless you are qualified
- 16) Never tamper with wiring or plugs to get them to fit into a receptacle they were not designed for.

III) ELECTROTHERAPY

- A) Wall Plate
- B) Modalities
- C) Electrode
- D) Polarity
 - 1) Positive pole, anode, red
 - 2) Negative pole, cathode, black
- E) Polarity test one
 - 1) Separate tips and immerse in glass of saltwater
 - 2) Turn selector switch to galvanic current and turn up intensity
 - 3) As water is decomposed, more active bubbles will accumulate at negative pole
- F) Polarity Test Two
 - 1) Place tips of two conducting cords on two separate pieces of blue moistened litmus paper
 - 2) Paper under positive pole will turn red
 - 3) Paper under negative pole will stay blue
- G) Galvanic Current
 - 1) Active electrode
 - 2) Inactive electrode
- H) Positive Pole Results
 - 1) Acidic reactions
 - 2) Closes pores
 - 3) Soothes nerves
 - 4) Decreases blood supply
 - 5) Contracts blood vessels
 - 6) Hardens or firms tissues
 - 7) Pulls acid solutions into skin
- I) Negative Pole Results
 - 1) Alkaline reactions
 - 2) Opens pores
 - 3) Stimulates (irritates) nerves
 - 4) Increases blood supply to skin
 - 5) Expands blood vessels
 - 6) Softens tissues
 - 7) Softens and liquefies grease deposits
 - 8) Forces alkaline solutions into skin
- J) Iontophoresis
 - 1) Cataphoresis
 - 2) Anaphoresis
 - 3) Disincrustation
- K) High-frequency Current (Tesla)
- L) Benefits of Tesla Current
 - 1) Stimulates circulation of blood
 - 2) Increases glandular activity

- 3) Aids in elimination and absorption
- 4) Increases metabolism
- 5) Improved germicidal action
- 6) Relieves congestion

IV) OTHER ELECTRICAL EQUIPMENT

- A) Hood hair dryers or heat lamps
- B) Curling or flat irons
- C) Heating caps
- D) Processing or accelerating machine

V) LIGHT THERAPY

A) Visible light

- 1) Electromagnetic radiation
- 2) Wavelength
 - (a) Long wavelengths
 - (b) Short wavelengths

B) Electromagnetic spectrum

- 1) Visible light
- 2) Ultraviolet rays and infrared rays
- 3) Visible spectrum

C) Infrared Rays

- 1) Make up 60% of natural sunlight
- 2) Have long wavelengths
- 3) Penetrate the deepest
- 4) Produce the most heat
- 5) Lamps should be at least 30" from skin
- 6) Exposure time is about 5 minutes
- 7) Check client comfort frequently
- 8) Never leave client unattended

D) Visible light rays

- 1) White light
- 2) Blue light
- 3) Red light

E) Ultraviolet (UV) rays

- 1) Short wavelengths
- 2) The least penetrating rays
- 3) Produce chemical effects
- 4) Kill germs

F) Disadvantages of Ultraviolet rays

- 1) Can cause skin cancer

G) Application of ultraviolet rays

- 1) Lamp should be 30" to 36" from skin
- 2) Therapy should begin with exposure of 2 to 3 minutes
- 3) Therapy can increase gradually to 7 or 8 minutes

H) Light and heat energy in nail tech

- 1) Catalysts
- 2) UV light