essential review

Using the words provided, fill in the blanks below to form a thorough review of Chapter 7, "The Basics of Chemistry and Electricity." Words or terms may be used more than once or not at all.

acid	combustion	hydrophilic	oxidizing
alcohol	compound	infrared	physical
alkaline	conductor	inorganic	polarity
alkanolamines	converter	light rays	radiant energy
alternating	density	lipophilic	rectifier
ampere	direct	liquids	solute
anaphoresis	disincrustation	matter	solvents
anode	electricity	miscible	surfactant
atom	electrode	mixtures	suspension
bias	element	molecule	therapeutic
cathode	emulsions	ointments	vaporizer
chemical	formaldehyde	organic	volatile
chemistry	galvanic	overheating	water
circuit breaker	high-frequency	oxidation	

1. A solution that has a pH less than 7 has an acid. pH, and a solution that has a pH higher than 7 has an alkaline pH.
2. A physical change is a change in the form of a substance, without the formation of a new substance. A chemical change occurs when a new substance is formed.
3. A surfactant is a substance that acts as a bridge to allow oil and water to mix, or emulsify.
4. Alcohol is a readily evaporating, colorless liquid obtained by the fermentation of starch, sugar, and other carbohydrates.
5. An atom is the smallest particle of an element that is capable of showing the properties of that element.
6. Anything that occupies space is defined as matter.
7. Characteristics of physical properties include density, specific gravity, hardness, odor, and color.
8. Emulsions are formed when two or more immiscible substances, such as oil and water, are united with the aid of a binder.

essential review *continued*

9. Inorganic chemistry is the branch of chemistry that deals with all substances that do not contain carbon.
10. Matter exists in three forms, solids, liquids, and gases.
11. Ointments, pastes, pomades, and styling waxes are semisolid mixtures made with any combination of petrolatum, oil, and wax.
12. Organic chemistry is the branch of chemistry that deals with all substances in which carbon is present.
13. Oxidizing agents are substances that readily release oxygen.
14. Solvents are classified as miscible and immiscible.
15. Solvents are any substances that are able to dissolve another substance.
16. Surfactant molecules have two ends: hydrophilic and lipophylic.
17. A suspension is a state in which solid particles are distributed throughout a liquid medium.
18. The universal solvent is water.
19. The basic unit of all matter is an element.
20. The science that deals with the composition, structure, and properties of matter is Chemistry.
21. To measure the pH of products, use blue paper.
22. Two or more atoms that are joined together chemically form a molecule.
23. When a substance is made up of two or more different elements, chemically joined, it is a molecule compound
24. When elements combine physically, they are called mixtures.
25. When oxygen combines with other substances so rapidly that light energy as well as heat is created, the process is known as Combustion.
26. electricity is a form of energy that produces magnetic, chemical, and thermal effects.
27. A Conductor is a substance that permits electrical current to pass through it easily.
28. A steamer or vaporizer produces moist, uniform heat that can be applied to the head or face.
29. A Converter is used to change direct current into alternating current, and a rectifier is used to change alternating current to direct current.
30. A positive electrode is called a/an anode, and a negative electrode is called a/an cathode.

essential review *continued*

31. A fuse is a safety device that prevents the overheating of electric wires.
32. An amp or ampere is the unit that measures the strength of an electric current (the number of electrons flowing through a wire).
33. An electrode is an applicator that directs the electric current from the machine to the client's skin.
34. Anaphoresis is the process of forcing liquids into the tissues from the negative toward the positive pole.
35. Artificial light rays are produced by using an electrical apparatus called a therapeutic lamp.
36. Direct current is a constant, even-flowing current, traveling in one direction, while alternating current is a rapid and interrupted current, flowing first in one direction, then in the opposite.
37. Do not use the negative galvanic current on skin with broken capillaries or pustular acne, or on a client with high blood pressure.
38. In modern electric wiring, the fuse has largely been replaced by the circuit breaker
39. Infrared rays make up 60 percent of natural sunlight.
40. Therapeutic lamps are used to produce artificial light rays in the salon.
41. The negative or positive state of electric current is polarity.
42. The high frequency current is characterized by a high rate of oscillation or vibration.
43. The process used to soften and liquify grease deposits in the hair follicles is desincrustation
44. The blue light contains few heat rays and has some germicidal and chemical benefits.
45. Oxidation creates a chemical change in the identity of a substance.
46. The dissolved substance in a solution is known as a solute.
47. Volatile alcohols are those that evaporate easily.
48. Substances that are used to neutralize acids or raise the pH of many hair products are known as alkanolamines
49. A preservative used in cosmetics that is toxic to inhale, a strong irritant, and a carcinogenic is formaldehyde
50. Another name for electromagnetic radiation is radiant energy

compound of hydrogen metal with oxygen

essential experience

Word Search

After determining the correct words from the clues provided, locate the words in the word search puzzle.

Acidic — Solution having a pH below 7.0
Alcohol — Readily evaporating, colorless liquid
Alkaline — Solution having a pH above 7.0
Ammonia — Colorless gas with pungent odor, composed of hydrogen and nitrogen
Atom — The smallest particle of an element that still retains the properties of that element
Chemistry — Science that deals with the composition, structures, and properties of matter
Combustion — Rapid oxidation of any substance
Compound — Chemical combination of two or more atoms of different elements
Element — The simplest form of matter
Emulsion — Mixture of two or more immiscible substances united with the aid of a binder or emulsifier
Glycerine — Sweet, colorless, oily substance formed by the decomposition of oils, fats, or fatty acids
Hydrophilic — Capable of combining with or attracting water
Immisible — Not capable of being mixed
Lipophilic — Capable of combining with or attracting oil
Matter — Any substance that occupies space, has physical and chemical properties, and exists in the form of a solid, liquid, or gas
Molecules — Two or more atoms joined chemically
Oxidation — Chemical reaction that combines an element or compound with oxygen to produce an oxide
Solution — Blended mixture of two or more solids, liquids, or gaseous substances
Surfactants — Surface active agent
Suspension — State in which solid particles are distributed throughout a liquid medium

H	C	W	D	G	L	B	W	B	P	I	K	M	A
T	Y	E	I	Y	U	Q	A	L	C	O	H	O	L
C	P	D	L	U	R	E	T	T	A	M	O	L	G
J	Y	S	R	B	L	T	M	P	O	W	M	E	L
N	P	U	N	O	I	T	S	U	B	M	O	C	Y
A	G	S	Q	D	P	C	K	I	L	J	Q	U	C
V	K	P	E	S	O	H	S	Z	M	S	Q	L	E
F	H	E	E	O	P	C	I	I	H	E	I	E	R
A	F	N	K	S	H	C	O	L	M	D	H	O	I
I	O	S	G	U	I	C	T	M	I	M	N	C	N
N	O	I	T	U	L	O	S	C	P	C	I	S	M
O	J	O	O	X	I	D	A	T	I	O	N	R	N
M	T	N	A	T	C	A	F	R	U	S	U	J	E
M	M	K	C	I	R	S	E	L	E	M	E	N	T
A	L	K	A	L	I	B	N	B	A	T	U	B	D

essential experience

Word Scramble

Scramble	Correct Word(s)
eotuls	solute *Clue:* Any substance that dissolves into a liquid and forms a solution
etawr	water *Clue:* A universal solvent
iicilbesmm	immiscible *Clue:* Not mixable
lelitavo	volatile *Clue:* Easily evaporated
lnmioseu	emulsion *Clue:* Formed when two or more immiscible substances are united with the aid of a binder
melsblic	miscible *Clue:* Mixable
peword	powder *Clue:* Physical mixture of two solids
setpsa	pastes *Clue:* Semisolid mixture made of petrolatum, oil, and wax
snoituol	solution *Clue:* Evenly dispersed mixtures of two or more kinds of molecules
tnevols	solvent *Clue:* Any substance that is able to dissolve another substance
iosnnpesus	suspension *Clue:* Mixtures of one type of matter in another type of matter
nntsiemto	ointments *Clue:* Semisolid mixtures of organic substances and a medicinal agent

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Conductors and Types of Electricity

A conductor is a substance that permits electric current to pass through it easily. A nonconductor is a substance that resists the passage of an electric current. Identify all the items listed below as either conductors or nonconductors of electricity by writing a C or N in the space provided.

N Dry wood
C Wet cotton
C Copper
N Glass
C Human body
N Cement

N Silk
C Silver
C Aluminum
N Rubber
C Carbon
C Acid or salt solutions

N Asbestos
C Tar
C Water
N Bricks
C Linen

Describe the construction of an electric wire:

In your own words, explain the difference between a direct current and an alternating current.

Direct current: a constant - even flowing current that travels in one direction only • produces a chemical reaction

Alternating current: a rapid • interrupted current, flowing in one direction first then the opposite direction. It produces a mechanical action

Can one type of current be changed into another type? yes Explain: Using a converter to change direct to alternating A rectifier to change alternating to direct

essential experience

Matching Exercise—Electrical Measurements

Match each of the following essential terms with its definition.

4	Volt
3	Amp
2	Milliampere
6	Ohm
1	Watt
5	Kilowatt

1. Measurement of how much electric energy is being used in one second.
2. 1/1,000 of an ampere. The current for facial and scalp treatments is measured in this manner.
3. The unit of measurement for the strength of an electric current (the number of electrons flowing through a wire).
4. Unit for measuring the pressure that forces the electric current forward.
5. The electricity in your house is measured with this unit.
6. This unit measures the resistance of an electric current. Unless the force is stronger than the resistance, current will not flow through the wire.

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Key

Safety of Electrical Equipment

Fill in the blanks for the safety precautions that should be followed to avoid accidents and ensure greater client satisfaction.

1. All the electrical appliances you use should be UL certified.
2. Read all instructions before using any electrical equipment.
3. Disconnect all appliances when not in use.
4. Inspect all electrical equipment regularly.
5. Keep all wires, plugs, and equipment in good repair.
6. Use only one plug to each outlet.
7. You and your client should avoid contact with water and metal surfaces when using electricity.
8. Do not leave your client unattended while connected to an electrical device.
9. Keep electrical cords off the floor and away from people's feet.
10. Do not attempt to clean around electric outlets while equipment is plugged in.
11. Do not touch two metal objects at the same time if either is connected to an electric current.
12. Do not step on or place objects on electrical cords.
13. Do not allow electrical cord to become twisted as it can cause a short circuit.
14. Disconnect appliances by pulling on the plug, not the cord.
15. Do not attempt to repair electrical appliances unless you are qualified.