

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
blue	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 _____ pH, and a solution that has a pH higher than 7 has an _____ pH.
2. A _____ change is a change in the form of a substance, without the formation of a new substance. A _____ change occurs when a new substance is formed.
3. A _____ is a substance that acts as a bridge to allow oil and water to mix, or emulsify.
4. _____ is a readily evaporating, colorless liquid obtained by the fermentation of starch, sugar, and other carbohydrates.
5. An _____ 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 _____.
7. Characteristics of physical properties include _____, specific gravity, hardness, odor, and color.
8. _____ 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. _____ chemistry is the branch of chemistry that deals with all substances that do not contain carbon.
10. Matter exists in three forms, solids, _____, and gases.
11. _____, pastes, pomades, and styling waxes are semisolid mixtures made with any combination of petrolatum, oil, and wax.
12. _____ chemistry is the branch of chemistry that deals with all substances in which carbon is present.
13. _____ agents are substances that readily release oxygen.
14. Solvents are classified as _____ and immiscible.
15. _____ are any substances that are able to dissolve another substance.
16. Surfactant molecules have two ends: _____ and _____.
17. A _____ is a state in which solid particles are distributed throughout a liquid medium.
18. The universal solvent is _____.
19. The basic unit of all matter is an _____.
20. The science that deals with the composition, structure, and properties of matter is _____.
21. To measure the pH of products, use _____ paper.
22. Two or more atoms that are joined together chemically form a _____.
23. When a substance is made up of two or more different elements, chemically joined, it is a _____.
24. When elements combine physically, they are called _____.
25. When oxygen combines with other substances so rapidly that light energy as well as heat is created, the process is known as _____.
26. _____ is a form of energy that produces magnetic, chemical, and thermal effects.
27. A _____ is a substance that permits electrical current to pass through it easily.
28. A steamer or _____ produces moist, uniform heat that can be applied to the head or face.
29. A _____ is used to change direct current into alternating current, and a _____ is used to change alternating current to direct current.
30. A positive electrode is called a/an _____, and a negative electrode is called a/an _____.

essential review *continued*

31. A fuse is a safety device that prevents the _____ of electric wires.
32. An amp or _____ is the unit that measures the strength of an electric current (the number of electrons flowing through a wire).
33. An _____ is an applicator that directs the electric current from the machine to the client's skin.
34. _____ 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 _____ lamp.
36. _____ current is a constant, even-flowing current, traveling in one direction, while _____ current is a rapid and interrupted current, flowing first in one direction, then in the opposite.
37. Do not use the negative _____ 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 _____.
39. _____ rays make up 60 percent of natural sunlight.
40. Therapeutic lamps are used to produce artificial _____ in the salon.
41. The negative or positive state of electric current is _____.
42. The _____ 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 _____.
44. The _____ light contains few heat rays and has some germicidal and chemical benefits.
45. _____ creates a chemical change in the identity of a substance.
46. The dissolved substance in a solution is known as a _____.
47. _____ 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 _____.
49. A preservative used in cosmetics that is toxic to inhale, a strong irritant, and a carcinogenic is _____.
50. Another name for electromagnetic radiation is _____.



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Word Search

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

- _____ Solution having a pH below 7.0
- _____ Readily evaporating, colorless liquid
- _____ Solution having a pH above 7.0
- _____ Colorless gas with pungent odor, composed of hydrogen and nitrogen
- _____ The smallest particle of an element that still retains the properties of that element
- _____ Science that deals with the composition, structures, and properties of matter
- _____ Rapid oxidation of any substance
- _____ Chemical combination of two or more atoms of different elements
- _____ The simplest form of matter
- _____ Mixture of two or more immiscible substances united with the aid of a binder or emulsifier
- _____ Sweet, colorless, oily substance formed by the decomposition of oils, fats, or fatty acids
- _____ Capable of combining with or attracting water
- _____ Not capable of being mixed
- _____ Capable of combining with or attracting oil
- _____ Any substance that occupies space, has physical and chemical properties, and exists in the form of a solid, liquid, or gas
- _____ Two or more atoms joined chemically
- _____ Chemical reaction that combines an element or compound with oxygen to produce an oxide
- _____ Blended mixture of two or more solids, liquids, or gaseous substances
- _____ Surface active agent
- _____ 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

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Word Scramble

Scramble	Correct Word(s)
eotuls	_____
	<i>Clue:</i> Any substance that dissolves into a liquid and forms a solution
etawr	_____
	<i>Clue:</i> A universal solvent
icilbesmm	_____
	<i>Clue:</i> Not mixable
lelitavo	_____
	<i>Clue:</i> Easily evaporated
lnmioseu	_____
	<i>Clue:</i> Formed when two or more immiscible substances are united with the aid of a binder
melsbiic	_____
	<i>Clue:</i> Mixable
peword	_____
	<i>Clue:</i> Physical mixture of two solids
setpsa	_____
	<i>Clue:</i> Semisolid mixture made of petrolatum, oil, and wax
snoituol	_____
	<i>Clue:</i> Evenly dispersed mixtures of two or more kinds of molecules
tnevols	_____
	<i>Clue:</i> Any substance that is able to dissolve another substance
iosnnpesus	_____
	<i>Clue:</i> Mixtures of one type of matter in another type of matter
nntsiemto	_____
	<i>Clue:</i> 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.

_____ Dry wood	_____ Silk	_____ Asbestos
_____ Wet cotton	_____ Silver	_____ Tar
_____ Copper	_____ Aluminum	_____ Water
_____ Glass	_____ Rubber	_____ Bricks
_____ Human body	_____ Carbon	_____ Linen
_____ Cement	_____ Acid or salt solutions	

Describe the construction of an electric wire:

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

Direct current: _____

Alternating current: _____

Can one type of current be changed into another type? _____ Explain: _____

essential experience

Matching Exercise—Electrical Measurements

Match each of the following essential terms with its definition.

_____ Volt
_____ Amp
_____ Milliampere
_____ Ohm
_____ Watt
_____ 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.

essential experience

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

essential experience

Matching Exercise

Match the following essential terms with their identifying phrases or definition.

- | | |
|-----------------------|---|
| _____ Alcohol | 1. Special type of oil used in hair conditioners and as a water-resistant lubricant for the skin. |
| _____ Acid | 2. A sweet, colorless, odorless, oily substance formed by the decomposition of oils, fats, or fatty acids. |
| _____ Ammonia water | 3. Process used to soften and emulsify grease deposits and blackheads in the hair follicles. |
| _____ Disincrustation | 4. Chemical reaction in which the oxidizing agent is reduced and the reducing agent is oxidized. |
| _____ Atom | 5. Having an affinity or attraction to fat and oils. |
| _____ Glycerine | 6. Another term for petroleum jelly. |
| _____ Petrolatum | 7. The smallest particle of an element that still retains the properties of that element. |
| _____ Lipophilic | 8. A colorless liquid with a pungent odor, composed of hydrogen and nitrogen in a water solution. |
| _____ Redox | 9. A colorless liquid obtained by the fermentation of starch, sugar, and other carbohydrates. |
| _____ Silicone | 10. Having a pH below 7.0. |

