GIARRANO-JUNIOR COSMETOLOGY- OFF-SITE LEARNING PACKET DAY 6

DIRECTIONS:

1. IF YOUR PACKET BEGINS WITH A SUMARY AND REVIEW PLEASE READ THOSE PAGES FIRST
2. COMPLETE THE WORK SHEETS AND VOCABULARY WHERE IF INCLUDED. YOU MAY GOOGLE AND REFERENCE THE MILADY WEB SITE FOR VOCABULARY WORDS. NOT ALL ASSIGNMENTS CONTAIN VOCABLARY, 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.

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- There are many benefits for the client who takes advantage of the various salon services that use chemical products. While the use of chemical products has great benefits, we must always remember they create a potential for damage or injury as well.
- As a professional cosmetologist, your ability to stay informed about new developments and products and how to use them effectively and safely will greatly impact your success.

CHAPTER REVIEW QUESTIONS AND ANSWERS:

1. What is chemistry?
   Answer: Chemistry is the science that deals with the composition, structure, and properties of matter and how matter changes under different conditions.
   Note: The answer to this question can be found on page 254 of Milady Standard Cosmetology.

2. Why is a basic understanding of chemistry important to a cosmetologist?
   Answer: To use professional products effectively and safely, all cosmetology professionals must have a basic understanding of chemistry. It is important to understand chemistry because hair color products, chemical texturizers, shampoos, conditioners, styling aids, nail enhancements, nail tips, and nail polishes have chemical substances.
   Note: The answer to this question can be found on page 254 of Milady Standard Cosmetology.

3. What is the difference between organic and inorganic chemistry?
   Answer: Organic chemistry is the study of substances that contain the element carbon. Inorganic chemistry is the study of substances that do not contain carbon but may contain hydrogen.
   Note: The answer to this question can be found on page 255 of Milady Standard Cosmetology.

4. What is matter?
   Answer: Matter is any substance that occupies space and has mass (weight).
   Note: The answer to this question can be found on page 255 of Milady Standard Cosmetology.

5. What is an element?
   Answer: An element is the simplest form of chemical matter. It cannot be broken down into a simpler substance without a loss of its identity.
   Note: The answer to this question can be found on page 255 of Milady Standard Cosmetology.

6. What are atoms?
   Answer: Atoms are the smallest particle of an element that can exist either alone or in combination. All matter is made entirely of chemicals. They are the structural units that make up elements.
   Note: The answer to this question can be found on page 256 of Milady Standard Cosmetology.

7. Explain the difference between elemental molecules and compound molecules. Give examples.
   Answer: Elemental molecules are molecules containing two atoms of the same element in definite proportions. An example is the atmospheric air that we breathe. Compound molecules are chemical combinations of two or more atoms of different elements in definite proportions. An example is table salt.
   Note: The answer to this question can be found on page 256 of Milady Standard Cosmetology.

8. Name and describe the three states of matter.
   Answer: The three states of matter are:
   - Solids: They are rigid and have a fixed shape and volume.

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- Liquids: They have a definite volume but take the shape of their containers.
- Gases: They do not have a fixed volume or shape; they take the shape and volume of their containers.

Note: The answer to this question can be found on page 257 of Milady Standard Cosmetology.

9. What are the physical and chemical properties of matter? Give examples.
Answer: Physical properties of matter are characteristics that can be determined without a chemical reaction and do not involve a chemical change. Examples of physical properties are color, size, weight, hardness, and glossiness. Chemical properties of matter are characteristics that can only be determined by a chemical reaction and a chemical change in the substance. Examples of chemical properties are rusting iron, burning wood, or hardening of nail enhancements.
Note: The answer to this question can be found on pages 257–258 of Milady Standard Cosmetology.

10. What is the difference between physical and chemical change? Give examples.
Answer: Physical change is a change in the form or physical properties of a substance without a chemical reaction or the creation of a new substance. Examples of physical change are when ice melts into water and then into a vapor, when a temporary hair color is applied to the hair, or when nail polish is taken off the nail with a remover solvent. Chemical change is a change in the chemical composition or make-up of a substance. Examples of chemical change are the oxidation of haircolor or bleaching of melanin by peroxide.
Note: The answer to this question can be found on page 258 of Milady Standard Cosmetology.

11. Explain oxidation–reduction (redox).
Answer: Oxidation–reduction is a chemical reaction in which the oxidizing agent is reduced and the reducing agent is oxidized. Chemical services would not be possible without oxidation–reduction (redox) reactions.
Note: The answer to this question can be found on page 258 of Milady Standard Cosmetology.

12. Explain pure substances and physical mixtures. Give examples.
Answer: Pure substances are chemical combinations of matter in definite (fixed) proportions. Aluminum, distilled water is an example of a pure substance. Physical mixtures are physical combinations of matter in any proportions. They have no definite or constant composition—the composition of the mixture varies according to who prepares the mixture. A hair styling spray is an example of physical mixture.
Note: The answer to this question can be found on page 259 of Milady Standard Cosmetology.

13. What are the differences among solutions, suspensions, and emulsions? Give examples.
Answer: A solution is a stable physical mixture of two or more substances. An example of a solution is salt water. A suspension is an unstable physical mixture of undissolved particles floating in a liquid. An example of a suspension is oil and vinegar salad dressing, in which the oil droplets are suspended in the vinegar. An emulsion is an unstable mixture of two or more substances that normally will not stay blended without a special ingredient called an emulsifier. An example of an emulsion is hand lotion.
Note: The answer to this question can be found on pages 260–261 of Milady Standard Cosmetology.

14. Define pH and the pH scale.
Answer: pH is the abbreviation used for potential hydrogen.
The pH scale measures the acidity and alkalinity of a substance. It has a range of 0 to 14, with 7 being neutral. A pH below 7 is an acidic solution and a pH above 7 is an alkaline solution.
Note: The answer to this question can be found on pages 264–265 of Milady Standard Cosmetology.

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ACTIVITY 4 Fill in the Blanks

Using the words provided, fill in the blanks below to form a thorough review of Chapter 12, Basics of Chemistry. Words or terms may be used more than once or not at all.

chemical	**molecule**	**suspensions**
emulsions	**organic**	**volatile organic compounds**
inorganic	**oxidizing**	
logarithm	**physical**	
miscible	**solvents**	

1. _____ means multiples of 10.
2. A _____ change refers to a change in the form of a substance, without the formation of a new substance.
3. A _____ change is when a new substance is formed.
4. *Volatile organic compounds* are substances that contain carbon and evaporate quickly and easily.
5. _____ are formed when two or more immiscible substances, such as oil and water, are united with the aid of a binder.
6. _____ chemistry is the branch of chemistry that deals with all substances that do not contain carbon.
7. _____ chemistry is the branch of chemistry that deals with all substances in which carbon is present.
8. _____ agents are substances that readily release oxygen.
9. _____ liquids are mutually soluble, meaning they can be mixed into stable solutions.
10. _____ are any substances that are able to dissolve another substance.
11. A _____ is an unstable mixture of undissolved particles in liquid.
12. Two or more atoms that are joined together chemically form a _____.