

**Chapter 4, Part 1.**

1. The energy that is stored in chemical compounds is called \_\_\_\_\_. The food you eat contains proteins, carbohydrates, and fats and as these are digested, \_\_\_\_\_ is gradually released. When a chemical reaction like digestion releases energy it is known as an \_\_\_\_\_ reaction.
2. Give several examples of exothermic reactions:
3. Rapid exothermic reactions can be \_\_\_\_\_. Explosions of methane gas mixed with oxygen can be devastating. The \_\_\_\_\_ coal mine was such an example.
4. Certain reactions require \_\_\_\_\_ to be applied to them in order for the \_\_\_\_\_ to take place. These types of reactions are called \_\_\_\_\_. One of the most familiar examples is the process of \_\_\_\_\_ food. Another is taking a \_\_\_\_\_ with a camera. The \_\_\_\_\_ that reaches the film reacts and produces a pattern. Also, recharging a \_\_\_\_\_ is another example of an endothermic reaction.
5. Most chemical reactions require at least \_\_\_\_\_ steps. In the first step, the \_\_\_\_\_ of the \_\_\_\_\_ are \_\_\_\_\_ apart from each other. Then, they \_\_\_\_\_ in new ways to form the products. A match is heated up by the sulphur striker before it will burn.
6. Light energy can be \_\_\_\_\_ by green plants and then stored as \_\_\_\_\_ energy in the plants through a series of chemical reactions called \_\_\_\_\_. These reactions are \_\_\_\_\_, and when you eat the plants the energy is released to your body as a series of \_\_\_\_\_ reactions.
7. As the earth is bathed in light energy from the \_\_\_\_\_, this energy is captured by the process of \_\_\_\_\_ and passed onto animals by their food. It makes sunlight the \_\_\_\_\_ for all food webs! To a certain degree, scientists have learned to use \_\_\_\_\_ from the sun in \_\_\_\_\_.

**Part 2.**

8. The speed of a chemical reaction is referred to as the \_\_\_\_\_. Depending on the chemicals, some reactions are naturally \_\_\_\_\_ or \_\_\_\_\_. Sometimes, scientists want to slow down the \_\_\_\_\_ of reaction. For example: \_\_\_\_\_ or \_\_\_\_\_. On other occasions, people want to speed up some reactions like \_\_\_\_\_ or \_\_\_\_\_. List the four factors affecting reaction rates:

9. \_\_\_\_\_ affects all chemical reactions. In some reactions, it may be difficult to see the effects of temperature. In other reactions, the effect of temperature (too much!) is apparent.
10. In order to react in the first place, substances must come into \_\_\_\_\_. When one substance is a \_\_\_\_\_, and the other is a \_\_\_\_\_, the chemical reaction occurs on the \_\_\_\_\_ of the solid. The \_\_\_\_\_ of surface area affects the rate of reaction. Which has the greater surface area, a single sheet or broken piece of window glass?
11. The amount of solute that is \_\_\_\_\_ in a certain amount of solution is referred to as its \_\_\_\_\_. In turn, the concentration affects the rate of chemical reaction.
12. Some chemical reactions need a little help! Scientists use a \_\_\_\_\_ to speed up the rate of reactions without using them up within the reaction. They work by lowering the \_\_\_\_\_ of \_\_\_\_\_ required to for the reaction to take place. This also means that the reaction can take place at a lower \_\_\_\_\_.
13. Briefly describe how are catalysts used in automobiles?
14. Catalysts are used by your body to release the \_\_\_\_\_ stored in the food that you eat. The catalysts found in the human body are called \_\_\_\_\_ and they are essential to life. Why are catalysts necessary for the release and utilization of food energy?
15. Explain why is the chemical *Cyanide* so poisonous to your body? Enzymes can also be destroyed by too much \_\_\_\_\_.

### Part 3.

16. Different \_\_\_\_\_ corrode in different reactions at different \_\_\_\_\_. The corrosion of iron is called \_\_\_\_\_, it can lead to eating up all of the metal involved. Some metals, like \_\_\_\_\_, do not corrode while others tend to corrode only at the \_\_\_\_\_.
17. Some metals become covered by a \_\_\_\_\_ on the surface that \_\_\_\_\_ the metal below. Metal \_\_\_\_\_ are solid solutions of different metals, they resist corrosion quite well. However, alloys like \_\_\_\_\_ are expensive to produce for large scale.
18. An expensive copper roof will react with the \_\_\_\_\_ in the atmosphere producing a green layer or mixture of compounds like: \_\_\_\_\_. Products like brass are a mixture of \_\_\_\_\_ and \_\_\_\_\_, but are too expensive for larger construction projects. Corrosion on iron is \_\_\_\_\_ up by the presence of rust.
19. What do you think the advantages of using brass or stainless steel for car bodies would be? Why do you think that cars are not made of these materials? List some products that may be suitable:

#### Chapter 5, Part 4.

20. Make a quick list of all the common household chemicals that you may have in your household:

21. For many chemical products there are alternatives to choose from. A common product is \_\_\_\_\_ or \_\_\_\_\_ used along with water to clean. They contain \_\_\_\_\_ molecules which are attracted to \_\_\_\_\_ and to the other \_\_\_\_\_. By attaching to the \_\_\_\_\_ or greasy material, it helps break it into \_\_\_\_\_ drops. Thus, the dirt just floats away!

#### Part 5.

22. \_\_\_\_\_ and \_\_\_\_\_ are common words used in a variety of everyday situations. An \_\_\_\_\_ is a compound that has certain characteristics such as: \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ in chemical reactions in a similar way.
23. A \_\_\_\_\_ is also a compound and has distinct properties. Bases taste \_\_\_\_\_, they are \_\_\_\_\_ in water, feel \_\_\_\_\_, and \_\_\_\_\_. Any substances which are neither acid or basic, like water, are referred to as \_\_\_\_\_.
24. In order to tell if a substance is an acid or a base, a \_\_\_\_\_ is used. This

substance changes \_\_\_\_\_ to signal how acidic or basic the test substance is. A common indicator is a dye called \_\_\_\_\_.

25. Acids and bases are common in \_\_\_\_\_ and \_\_\_\_\_ as well as in a variety of foods or drinks. These are usually quite mild and not strong enough to cause harm, but serious \_\_\_\_\_ damage can occur from spills or fumes can harm your \_\_\_\_\_. An example of strong base is found in household \_\_\_\_\_.
26. The result of mixing acids and bases is a chemical reaction generally called \_\_\_\_\_. Neutralization of an acid and base creates \_\_\_\_\_ and a general type of compound called a \_\_\_\_\_. Write a word equation for combining hydrochloric acid and sodium hydroxide:
27. Weak acids and bases can be used to \_\_\_\_\_ spills of stronger and more dangerous bases or acids. Two examples include: \_\_\_\_\_ and \_\_\_\_\_.

#### **Part 6.**

28. Often the label on a household product does not describe the content very well, or the proper chemical names may not be used. The amount of information depends on the \_\_\_\_\_ of product and for what it is used.
29. Do the following activity at home and use 6 common household products. Read *Activity 5E - Examining Household Products* on page 89 of your text book. Answer question #2 below:
30. Some products are useful in the home because the chemicals they use will not \_\_\_\_\_ easily with other materials. For example, consumers would not want plastic salad bowls or

containers to react with the \_\_\_\_\_ stored in them, leaving a bad taste or \_\_\_\_\_ on the food.

31. Some household products are useful because they do react with other \_\_\_\_\_. These products are called \_\_\_\_\_. They may include \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
32. Products containing \_\_\_\_\_ chemicals are much more \_\_\_\_\_ than those who do not. List special precautions one should take in handling and storing them safely:
33. Read Table 5.4 on page 91 of your text book. Any chemical which is dangerous to humans or harmful to the \_\_\_\_\_ is called a \_\_\_\_\_. Their containers will have warnings and describe \_\_\_\_\_ treatment recommended.
34. The \_\_\_\_\_ used on hazardous household products identify \_\_\_\_\_ kinds of products:
35. Some of these chemicals go to work instantly! They may cause \_\_\_\_\_, or \_\_\_\_\_ in your clothes, and eat into \_\_\_\_\_. This is true of strong acids, but there are also strong bases such as the ones used in \_\_\_\_\_ cleaners which are highly corrosive.
36. Other hazardous chemicals are slow to show their effects. The \_\_\_\_\_ contained in leaded gasoline can cause changes in the red blood cells, general \_\_\_\_\_, and \_\_\_\_\_.
37. Why has the disposal of hazardous household chemicals become such a large concern lately?
38. What can be done to safely dispose & eliminate the huge variety of hazardous household wastes?
39. Read the *Disposing of Household Hazardous Waste* on page 93 of your text book. Look up the following terms to see what they mean: Non-biodegradable, run-off, incinerate, and landfill.