

Chapter 10, Part 1.

1. In any _____, one or more new _____ are formed.
2. When _____ happens, new substances have _____ properties of their own.
3. The starting materials of chemical reaction are called the _____. The resulting substance is called the _____.
4. A new substance is not formed by _____. List three states of water: _____
5. The easiest way to represent a chemical reaction is with an _____. It uses symbols and _____ to show the important information about the chemical reaction.
6. Study the chart of Chemical formula symbols in table 10.1 on page 217.

Part 2.

7. State the Law of Conservation of Mass:
8. A _____ equation has an equal number of atoms on each side of the arrow in equations.
9. Study the example of magnesium & oxygen reaction on page 218/219 and write it below:
10. Describe the three step process of trial and error when balancing a chemical equation:
11. Study *Example 1* on page 219 and follow steps #1 to 3. Try the instant practice on page 220.

Part 3.

12. Chemical reactions which _____ energy are called _____.
13. Write the equation for burning methane: _____.
14. A reaction which require constant input of _____ are called _____.
15. Write the equation for the breakdown of limestone: _____.
16. Chemical reactions may be also classified by the way the _____ are _____.
17. The general form of _____ reaction is _____. Here the atoms of two or more substances are _____ to form a compound.
18. Write the equation for the synthesis of water: _____.
19. Show the three equations and the steps it takes to produce acid rain and acid precipitation:
20. _____ reactions happen when a compound breaks down and its molecules are rearranged into _____ substances. The general form of a decomposition reaction is _____.
21. Write the equation for the decomposition of water: _____.
22. _____ reactions happen when a _____ element in a compound is replaced with a another _____ element. The general form is: _____.
23. Double replacement reactions occur when the elements in different _____ replace each other or _____. The general form for this: _____.
24. _____ is a type of double replacement reaction where an _____ and a _____ exchange ions. The result of the reaction is the formation of a _____ and _____.
25. The general form of these reactions is written this way: _____.
26. Read the Career profile about being a Clinical Pharmacist on page 228.

Chapter 11, Part 4.

27. When electricity is used to _____ compounds the process is called _____.
28. List several industrial uses of electrolysis: _____.
29. Why is British Columbia a good place for electrolytic industry?
30. The container in which electrolysis takes place is called a _____.
31. Draw a diagram and label the components which make up an electrolytic cell:

32. For water to conduct electricity, _____ such as _____, _____, and _____ produce mobile ions when they dissolve in water allowing electricity to flow in a _____.
33. Describe the three requirements that must be present in order for electrolysis to work:

34. Study how the electrolysis of copper chloride solution works in figure 11.5 on page 236.

Part 5.

35. Using an electric current to place a thin covering of one metal on another is called _____.
36. Describe how a spoon can be electroplated with silver?

37. What important metals are made by electrolytic reactions? _____.
38. Name the three most common elements: _____.
39. _____ is always combined with other elements to form _____ in nature.
40. _____ began a series of experiments to invent a _____ method to extract aluminum.
41. Large aluminum refineries use _____ and _____ sources of _____.
42. _____ ore is used at Kitimat, Bc to produce refined aluminum metal.
43. Canada is the world's _____ largest copper producer in the world.

44. During copper electrolysis refining, copper is transferred from the _____ to the _____.
45. The byproducts of this process include: _____, _____, and _____. The resulting copper is _____ pure and pure enough to _____.
46. Chlorine used for purifying _____ is made by electrolysis. _____ is also used to make _____ and to produce _____ like _____.
47. Sodium hydroxide is used to make _____ and _____ used to neutralize acids. It is also used in the production of _____.
48. Hydrogen may be used to make what products? _____.

Part 6.

49. A _____ cell consists of two different _____ and an _____.
50. Briefly describe how chemical cells produce electricity:
51. What is meant by the term Primary Cell?
52. A _____ is a combination of two or more _____. A flashlight battery is a _____.
53. A _____ dry cell, used in toys and flashlights, is made from an insulated _____ and a zinc cup filled with an _____ with a _____ in the middle.
54. The electrical circuit is made by the _____ across the electrolyte paste.
55. Why do carbon-zinc batteries need to “rest” after prolonged use?
56. An alkaline dry cell uses _____ and _____ as electrodes.
57. Why are alkaline batteries better than carbon zinc ones?

58. What is a mercury dry cell?
59. What is a silver oxide dry cell?
60. In a lead storage battery, the _____ cells there are, the greater is the _____.
61. Lead batteries can be _____ by a generator or alternator restoring the _____.
62. Diagram a lead car battery and explain what happens at the positive and negative electrodes:
63. What are some of the advantages of Nickel-Cadmium batteries?
64. Read the panel on *Disposing of Batteries* on page 249 of your textbook.
65. What are disadvantages of battery technology? How may chemists meet new challenges?