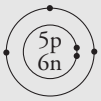
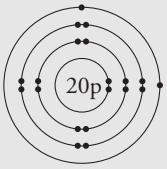
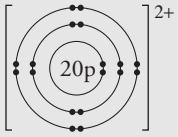
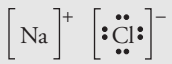
Checking Concepts

3. (a) Proton, electron, neutron
   (b) Proton (1+), electron (1–), neutron (0)
   (c) Protons and neutrons are in the nucleus, and electrons surround the nucleus in a regular pattern.
4. (a) 

   (b) Boron
5. (a) 

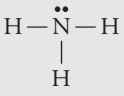
   (b) Aluminum
6. (a) 

   (b) 

7. (a) 

   (b) 

   (c) 

   (d) 

8. Covalent
9. The mass of the reactants is equal to the mass of the products according to the law of conservation of mass.
10. The pH scale measures the acidity levels in solution.
11. (a) 7
    (b) Less than 7
    (c) Greater than 7
12. (a) An acid has one or more H on the left side of the formula, as in phosphoric acid (H_3PO_4). Organic acids have H on the right side of the formula, as in acetic acid (CH_3COOH).
    (b) A base has an OH on the right side of the formula and a metal on the left, as in $Mg(OH)_2$.
13. A salt
14. Acid-base indicators
15. (a) 5
    (b) 11
    (c) 6
16. (a) Yellow
    (b) Blue
    (c) Green
17. (a) Increased
    (b) 10 times
18. (a) Hydrochloric acid, HCl
    (b) Sodium hydroxide, NaOH
    (c) Sulfuric acid, H_2SO_4
19. (a) Basic
    (b) Acidic
20. (a) The term "organic compound" refers to almost all carbon-containing compounds; exceptions include carbon dioxide, carbon monoxide, and ionic carbonates, which are considered inorganic.
    (b) The term "inorganic compound" refers to compounds that generally do not contain carbon; the few exceptions include carbon dioxide, carbon monoxide, and ionic carbonates, which, despite containing carbon, are considered inorganic.
21. (a) A hydrocarbon is a compound containing the elements carbon and hydrogen.
    (b) Methane is used in heating, ethane is used in manufacturing, and propane is used in camp fuel.
22. Carbon, hydrogen, and oxygen
23. (a) Organic
    (b) Inorganic
    (c) Inorganic
    (d) Organic
    (e) Inorganic
    (f) Inorganic
    (g) Organic
    (h) Inorganic
24. (a) Synthesis
    (b) Synthesis
    (c) Decomposition
    (d) Combustion
    (e) Neutralization
    (f) Neutralization
    (g) Double replacement
25. (a) $Ca + CuF_2 \rightarrow CaF_2 + Cu$
    (b) $Rb + O_2 \rightarrow Rb_2O$
    (c) $C_3H_7OH + O_2 \rightarrow CO_2 + O_2$
    (d) $Cl_2 + PbI_4 \rightarrow PbCl_4 + Cl_2$
    (e) $Li_2O \rightarrow Li + O_2$
    (f) $HF + Ca(OH)_2 \rightarrow CaF_2 + H_2O$