

Review Questions: Chemistry Unit

SNC2D_06 - 07

- A gas can be proved to be oxygen by means of:
(a) a burning splint, which causes a small explosion or "pop";
(b) a glowing splint, which bursts into flame;
(c) a burning or glowing splint which goes out completely;
(d) limewater, which goes milky when shaken with the gas;
(e) a wet piece of litmus paper, which goes pink in the gas.
- On the Periodic Table, elements in the same vertical column have the same:
(a) electron orbit structure; (b) number of protons; (c) number of total electrons;
(d) number of neutrons; (e) number of electrons in their outer orbits.
- What is the charge on the cation in InP ?
A) $2+$ B) $3+$ C) $6+$ D) $1+$
- A solution of silver nitrate is added to a solution of copper(II) iodide and a white precipitate forms. What type of reaction is this?
A) synthesis B) decomposition C) single displacement D) double displacement
- In a lab, you mix magnesium metal with hydrochloric acid. What are the products of this reaction?
A) MgH_2 and Cl_2 B) MgCl_2 and H_2 C) MgCl and H_2 D) MgCl_2 and H
- Which of the following reactants are involved in a neutralization reaction?
A) water and an acid C) water and a salt
B) water and a base D) an acid and a base
- Orange crystalline ammonium dichromate was heated with a Bunsen burner. A green flaky product shot out of the test tube, along with many orange sparks. The reaction continued until all of the reactants were consumed, even though the Bunsen burner was removed when the reaction started. How can this reaction be classified?
A) decomposition and endothermic C) decomposition and exothermic
B) combustion and exothermic D) combustion and endothermic
- Which one of the following is not a property of a base?
A) turns phenolphthalein pink
B) turns litmus paper blue
C) reacts with ammonium chloride to produce chlorine gas
D) reacts with acids to neutralize them
- What is the best description for first-aid sprays and creams used to treat skin problems such as insect bites or burns?
A) basic B) acidic C) neutral D) either (a) or (b)
- Which of the following describes an antacid?
A) neutralizes acids C) is a weak acid
B) neutralizes bases D) will turn blue litmus paper pink

11. When an unknown compound was dissolved in water, the following observations were recorded:
- blue litmus paper turned red
 - conducted electricity
 - reacted with a metal to produce hydrogen gas
- What is this compound?

A) an acid B) a metal C) a metal oxide D) a non-metal oxide

12. Which one of the following describes a base?
- A) turns blue litmus paper red
 - B) dissolves in water to produce hydroxide ions
 - C) dissolves in water to produce hydrogen ions
 - D) reacts with carbonates to produce carbon dioxide gas

13. Compare a pH of 8.0 to a pH of 10.0. The first pH is:
- A) two times more acidic
 - B) 100 times more acidic
 - C) 100 times more basic
 - D) two times more basic

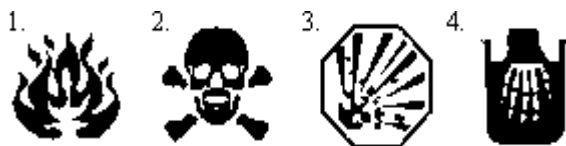
14. Which of the following statements is incorrect about catalysts?
- A) They speed up the rate of reaction.
 - B) They increase the rate at which the reactants are used up.
 - C) They increase the rate at which the products are created.
 - D) They are used up in the reaction.

15. In a chemical reaction, which of the following is not necessary?
- A) a direct collision between the reactant particles
 - B) sufficient energy
 - C) a catalyst
 - D) breaking the bonds in reactants and forming new bonds

16. If you spill hydrochloric acid on your hand, what should you do?
- A) scream
 - B) neutralize it with a base
 - C) place your hand under running water
 - D) wipe off the acid with a paper towel

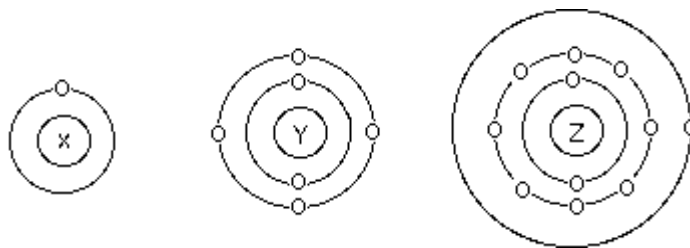
Matching

Match the following Hazardous Household Product Symbols (HHPS) to the type of hazard it indicates by placing the symbol number next to the hazard.



(a) explosive _____ (b) poison _____ (c) corrosive _____ (d) flammable _____

17. Identify the element represented by each of the following Bohr diagrams.



18. Lithium and oxygen react to form a compound.

(a) Draw Bohr diagrams of lithium and oxygen.

(b) Which is the metal and which is the nonmetal?

(c) Use Lewis diagrams showing the electron movement that occurs when lithium and oxygen react. (More than one atom of each element may be necessary. Do not forget to show energy changes.)

(d) What are the charges on the lithium and oxygen ions?

(e) Give the chemical formula and the chemical name of the compound formed.

19. (a) Select a halogen and sketch its Bohr diagram.

(b) Sketch the stable ion this halogen forms and indicate its electric charge.

(c) Give the name of this ion.

20. Use Lewis diagrams to show how hydrogen and nitrogen atoms form a stable molecule. Use as many atoms as are necessary. State the name and the formula of the compound formed.

21. Give the compound name or formula as required for the following:

K_2S _____

Ag_2O _____

sodium oxide _____

lithium iodide _____

beryllium chloride _____

PbI_2 _____

Fe_2O_3 _____

iron(II) bromide _____

copper(I) nitride _____

$AgNO_3$ _____

$CaSO_4$ _____

magnesium carbonate _____

copper(II) sulfate _____

Na_2CO_3 _____

$Cu(OH)_2$ _____

zinc chlorate _____

potassium sulfate _____

SO_2 _____

NBr_3 _____

carbon dioxide _____

silicon tetrabromide _____

$AlBr_3$ _____

ZnF_2 _____

calcium nitride _____

potassium phosphide _____

magnesium hydride _____

SnF_4 _____

Cu_2S _____

tin(II) phosphide _____

lead(IV) oxide _____

$Pb(ClO_3)_2$ _____

K_3PO_4 _____

calcium hydrogen carbonate _____

iron(II) hydroxide _____

$Sn(NO_3)_2$ _____

$Al(HCO_3)_3$ _____

calcium phosphate _____

lead(IV) carbonate _____

CF_4 _____

CS_2 _____

nitrogen phosphide _____

chlorine (I) oxide _____

CHAPTER 6

1. Write word equations for the following chemical reactions.

(a) Tarnish (Ag_2S) forms when a silver spoon is placed in sulfur.

(b) KOH and H_2 result when H_2O and potassium are mixed.

2. One component of the haze found over industrial areas is ammonium sulfate. It occurs when ammonia and sulfuric acid are present in the air. Write out the word equation for this reaction.

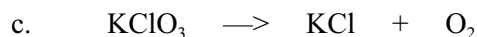
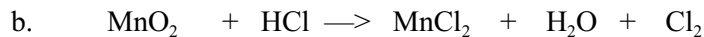
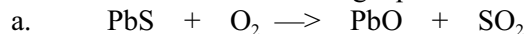
3. A stoppered flask with a lead (II) nitrate solution also contains a small, open test tube holding a potassium iodide solution. The mass of the apparatus was found to be 228 g. The flask is inverted, the two solutions mix, and a chemical reaction occurs.

(a) What things would indicate that a chemical reaction took place?

(b) What would the mass of the flask apparatus be after the mixing took place?

(c) What conclusion could you draw from this kind of experiment?

4. Balance the following equations:



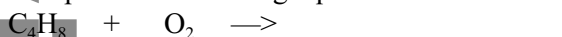
5. Pentane, C_5H_{12} , is a hydrocarbon gas easily kept as a liquid under pressure.

(a) Write out a word equation for the complete combustion of pentane.

(b) Write out the balanced chemical equation for the complete combustion of pentane.

(c) What else is produced that is not written as a chemical formula?

6. Complete the following equation and balance it.



(b) Classify the reaction type

7. When sugar, $\text{C}_6\text{H}_{12}\text{O}_6$, is strongly heated, water is driven off and the element carbon is left (something similar occurs when toast burns).

(a) Write out a balanced chemical reaction for strongly heating sugar.

(b) Classify the reaction type.

8. Copper wire and then a magnesium strip are held in a Bunsen burner flame.

(a) What indication is there in each case that a chemical reaction, if any, took place?

(b) What is the second reactant in either case?

(c) Classify each reaction that took place.

(d) Write a balanced chemical equation for each reaction that occurred.

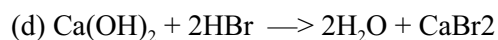
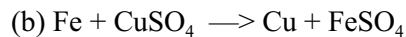
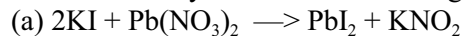
9. A pinch of manganese dioxide is added to hydrogen peroxide liquid in a test tube.

(a) Describe what happens.

(b) A glowing splint is held to the mouth of the test tube. Describe what happens and explain why.

(c) Only the hydrogen peroxide reacted. Manganese dioxide is a catalyst; it helped hydrogen peroxide to react but did not react itself. What type of chemical reaction occurred?

10. Classify each of the following reactions.



11. Magnesium metal pieces are dropped into a test tube containing sulfuric acid. A burning splint is held close to the mouth of the test tube.

(a) Describe what happens when the magnesium is mixed with the sulfuric acid.

(b) What happens when the burning splint is held at the mouth of the test tube? What does this test for?

(c) Write out a balanced chemical equation for the reaction with the magnesium.

(d) Classify the reaction type.

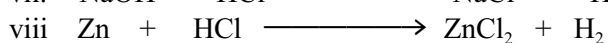
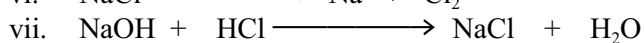
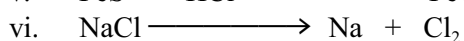
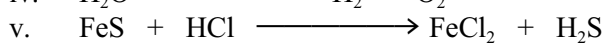
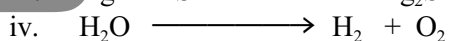
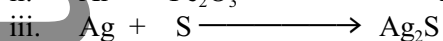
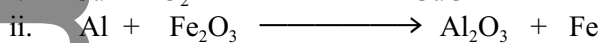
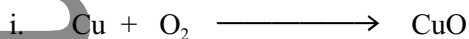
Chapter 7 & 8

1.a) Show the balanced chemical equation for the complete combustion of $\text{C}_4\text{H}_{10(g)}$.

b) Show a balanced chemical equation for the incomplete combustion of $\text{C}_4\text{H}_{10(g)}$.

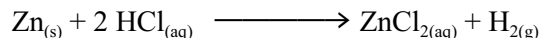
2.a) Classify each of the following reactions as synthesis, decomposition, double displacement or single displacement reactions.

b) Balance each equation.



3. What must happen for a reaction to occur according to the kinetic molecular theory?
4. Describe using the collision model how an increase in temperature will increase the rate of a reaction.
5. What is a catalyst, and what does it do?
6. What happens when you heat an enzyme?
7. You are going on a trip to a deserted island, you need to make your food last as long as possible. What type of food should you bring with you and how should you preserve it so that it will last as long as possible?
8. If you have 2 lumps of sugar and 2 teaspoons of ground sugar and you have 1 cup of hot tea and 1 cup of iced tea, explain which sugar should be placed into which cup so that they both dissolve.
9. If you react sodium hydroxide with hydrochloric acid, you have performed a _____ reaction.
Provide a balanced chemical equation for this reaction.

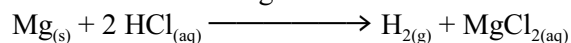
10. Consider the following reaction:



Indicate what is happening using the collision model based on the following conditions, and show what effect these conditions will have on the rate of the reaction.

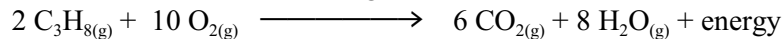
| Condition | Use the collision theory to explain the effect. | Effect on rate of reaction |
|---|---|----------------------------|
| Decrease the temperature | | |
| Add a catalyst | | |
| Use Mg ribbon instead of powdered magnesium | | |
| Use 6 M HCl _(aq) instead of 2 M | | |

11. What type of chemical reaction is the following:



- a) Synthesis b) Decomposition c) Single Displacement
 d) Double displacement e) None of the above

12. What type of chemical reaction is the following?



- a) Single displacement b) Decomposition c) Double displacement
 d) Combustion e) Both c) and d)

13. The rate of a chemical reaction can be altered by

- a) Performing the reaction in a bigger beaker
 b) Performing the reaction under a fume hood
 c) Increasing the temperature of the reaction
 d) a) and b)
 e) None of the above

15. A solution with a pH of 3.5 is how many more times acidic than a solution with a pH of 6.5?

- a) 10 times
 b) 100 times
 c) 1 000 times
 d) 10 000 times
 e) 100 000 times