Name _____ Date _____ Class _____

CHAPTER 5

TEKS/TAKS TEST PREPARATION FOR SCIENCE

Practice Test A TEKS

1 $C_6H_{12}O_6$
Glucose molecule

According to this chemical formula, all of the following elements are found in a glucose molecule EXCEPT

A carbon.
B nitrogen.
C hydrogen.
D oxygen.

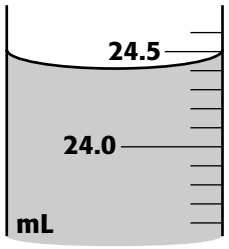
2 Fe_2O_3
Ferric oxide molecule

According to this chemical formula, how many atoms of oxygen are in a ferric oxide molecule?

F 1
G 2
H 3
J 4

3 A student collecting data in a laboratory investigation measured liquid using a graduated cylinder. What is the ***volume*** of water in this graduated cylinder?

A 24.3 mL
B 24.4 mL
C 24.5 mL
D 24.8 mL



4 A scientist carries out a reaction in a test tube. After the bubbling stops, she notices that the test tube is very warm. What might she conclude about the reaction?

F The reaction happened very quickly.
G The reaction is endothermic.
H The reaction is exothermic.
J No reaction took place.

5 According to the following chemical equation, how many reactants are needed to form water and carbon dioxide?

$$H_2CO_3 \rightarrow H_2O + CO_2$$

A 1
C 3
B 2
D 4

6 Look at the equations below. Which of the following statements is true?

❶ $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O + \text{energy}$

❷ $N_2 + O_2 + \text{energy} \rightarrow 2NO$

F Equation 1 is an endothermic reaction.
G Equation 2 is an endothermic reaction.
H Both equations 1 and 2 are exothermic reactions.
J It is not possible to determine the type of reaction.

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CHAPTER 5 TEKS/TAKS TEST PREPARATION FOR SCIENCE

Practice Test B TEKS

$2H_2SO_4$
Sulfuric Acid

1 According to the chemical formula shown above, all of the following elements are found in the chemical compound sulfuric acid EXCEPT

A hydrogen.
B sulfur.
C carbon.
D oxygen.

2 What is the total number of hydrogen atoms found in the formula above?

F 2
G 4
H 6
J 8

3 The substances listed on the left side of a chemical equation are the

A coefficients.
B precipitates.
C products.
D reactants.

4 Which process causes substances to react to form one or more new substances?

F Chemical change
G Physical change
H Evaporation
J Freezing

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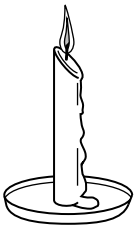

5 Look at the drawing above. The melting candle wax that is dripping down the side of the candle is an example of a(n)

A inhibitor.

B enzyme.

C chemical reaction.

D physical change.

6 Look at the drawing above. The burning of the candle wick is an example of a(n)

F inhibitor.

G enzyme.

H chemical reaction.

J physical change.

7 Which of the following molecules is composed of only four atoms?

A H_2O

B NaCl

C SO_3

D $MgCl_2$

8 A substance that is used to speed up a chemical reaction is called a(n)

F catalyst.

G reactant.

H inhibitor.

J precipitate.

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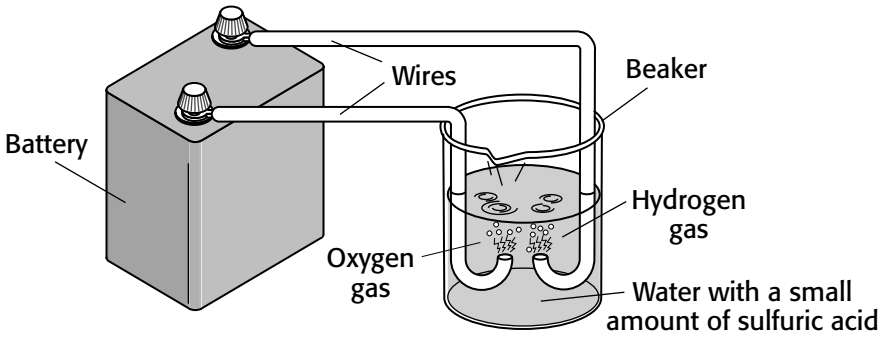

9 The drawing above shows electricity being used to break water down into hydrogen and oxygen during an experiment. Which of the following indicates that a chemical reaction is taking place in this diagram?

A Gases are being formed.
B The reaction is giving off light.
C A solid substance is being formed.
D There is a color change.

10 Look at the drawing above. More hydrogen and oxygen would be produced if

F a larger beaker was used.
G shorter wires were used.
H a larger battery was used.
J a smaller battery was used.

11 Which of the following is an example of a chemical change?

A Water freezing into ice
B Ice melting into water
C Butter softening into a liquid
D Meat spoiling and changing color

12 The rate of a chemical reaction can be increased by all of following EXCEPT

F increasing temperature of the reactants.
G decreasing concentration of the reactants.
H increasing surface area of the reactants.
J increasing concentration of the reactants.

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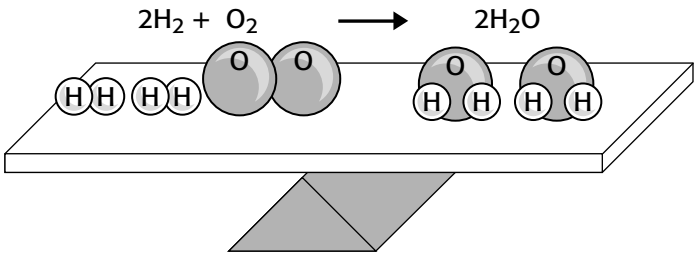

13 The drawing above shows the atoms before and after a chemical reaction. This drawing also illustrates the

A law of conservation of energy.

B law of inertia.

C law of conservation of mass.

D law of chemical reactions.

14 Look at the drawing above. The number of atoms on the left side of the arrow must

F be larger than the number of atoms on the right side of the arrow.

G be smaller than the number of atoms on the right side of the arrow.

H be equal to the number of atoms on the right side of the arrow.

J be used up in the reaction and not appear on the right side of the equation.

15 A solid that forms in a solution during a chemical reaction is called a(n)

A element.

B precipitate.

C mixture.

D bond.

16 A preservative is added to food to slow the rate of decay. The preservative is an example of a(n)

F inhibitor.

G enzyme.

H fuel.

J catalyst.

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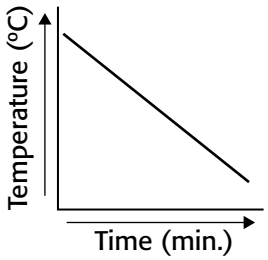
$$H_2O_2 \rightarrow H_2O + O_2$$

17 Which of these is the balanced form of the above chemical equation?

A $H_2O_2 \rightarrow H_2O + O_2$
B $2H_2O_2 \rightarrow 2H_2O + O_2$
C $3H_2O_2 \rightarrow 3H_2O + O_2$
D $2H_2O_2 \rightarrow H_2O + 2O_2$

18 Look at the equation above. The substances on the right side of the arrow are called the

F subscripts.
G catalysts.
H reactants.
J products.



19 The graph above shows the change in temperature over time in a chemical reaction. According to the graph, this chemical reaction is

A endothermic.
B exothermic.
C unbalanced.
D combustion.

20 During a laboratory experiment, John applied the law of conservation of energy. Which of the following did he assume to be true?

F Energy is not changed.
G Energy is not created or destroyed.
H The total energy of the reactants is greater than the total energy of the products.
J The total energy of the reactants is less than the total mass of the products.

CHAPTER 5 TEKS/TAKS TEST PREPARATION FOR SCIENCE

Answer Key and TAKS Doctor for Practice Test A

Answers	TEKS Correlation	TAKS Objectives
1 B	8.9C	4
2 H	8.9C	4
3 B	8.4A	1
4 H	8.10C	5
5 A	8.9C	4
6 G	8.10C	5

TAKS Doctor

The following TAKS questions have been diagnosed by the TAKS Doctor. Find out what might be causing your "ailing" answers. The TAKS Doctor will see you now!

Item 3 *asks students to determine a volume of water using a graduated cylinder.*

A **Incorrect.** This is not a careful reading.

B **Correct.** Water volume is measured at the bottom of the meniscus.

C **Incorrect.** Water volume is not measured at the top of the meniscus.

D **Incorrect.** The tick marks are for every 0.1 mL and not for every 0.2 mL.

Item 4 *asks students to draw conclusions about a chemical reaction that bubbles and gives off energy.*

F **Incorrect.** There is no information given about the rate of this reaction.

G **Incorrect.** The overall reaction gives off energy, so it is not likely to be an endothermic reaction.

H **Correct.** The overall reaction gives off energy, so it is most likely an exothermic reaction.

J **Incorrect.** There were two clues that indicated a chemical reaction—gas formation and an energy change.

Item 6 *asks students to classify the reactions as endothermic or exothermic.*

F **Incorrect.** Equation 1 is not an endothermic reaction, because energy is a product.

G **Correct.** Equation 2 is an endothermic reaction, because energy is a reactant.

H **Incorrect.** Energy is a reactant in equation 2.

J **Incorrect.** It is possible to determine what type of reaction these two equations represent, because energy is given as either a product or a reactant in each equation.

Answer Key and TAKS Doctor for Practice Test B

Answers		TEKS Correlation	TAKS Objectives	Answers		TEKS Correlation	TAKS Objectives
1	C	8.9C	4	**11**	D	8.9A	4
2	G	8.9C	4	**12**	G	8.9A	4
3	D	8.9C	4	**13**	C	8.9C	4
4	F	8.9A	4	**14**	H	8.9C	4
5	D	8.9A	4	**15**	B	8.9A	4
6	H	8.9A	4	**16**	F	8.9A	4
7	C	8.9C	4	**17**	B	8.9C	4
8	F	8.9A	4	**18**	J	8.9C	4
9	A	8.9A	4	**19**	A	8.10C	5
10	H	8.2A	1	**20**	G	8.2C	1

The following TAKS questions have been diagnosed by the TAKS Doctor. Find out what might be causing your "ailing" answers. The TAKS Doctor will see you now!

Item 4 *asks students to determine what process causes one or more substances to react to form one or more new substances.*

F **Correct.** When a chemical change occurs one or more substances react to form one or more new substances.

G **Incorrect.** Substances do not change their identities when they undergo physical changes.

H **Incorrect.** Substances do not change their identities during evaporation. Substances change states during evaporation.

J **Incorrect.** Substances do not change their identities during freezing. Substances change states during freezing.

Item 8 *asks students to determine the name of the substance that is used to speed up a chemical reaction.*

F **Correct.** A catalyst can be used to speed up a chemical reaction.

G **Incorrect.** A reactant is needed in order for a reaction to occur; a reactant does not speed up a chemical reaction, but the amount of a reactant can affect the rate of the reaction.

H **Incorrect.** An inhibitor does not speed up a reaction; an inhibitor slows down a reaction.

J **Incorrect.** A precipitate is a solid product that is formed from a solution during a chemical reaction.

Item 9 *asks students to decide what indicates that a chemical reaction is taking place.*

A **Correct.** The formation of gas is a clue that a chemical reaction is taking place. In the diagram, bubbles of oxygen and hydrogen are rising through the water solution.

B **Incorrect.** Although the formation of light is a clue that a chemical reaction is taking place, the diagram does not indicate that light is given off.

C **Incorrect.** Although the formation of a solid is a clue that a chemical reaction is taking place, gas is formed in this reaction, not a solid.

D **Incorrect.** Although a color change is a clue that a chemical reaction is taking place, no color change is indicated in the diagram.

Item 11 *asks students to determine which of the following is an example of a chemical change.*

A **Incorrect.** When a chemical change occurs, one or more substances react to form one or more new substances. Water freezing into ice is an example of a change of state and an example of a physical change.

B **Incorrect.** Ice melting into water is an example of a change of state and an example of a physical change.

C **Incorrect.** Butter softening into a liquid is an example of a change of state and an example of a physical change.

D **Correct.** The mention of spoilage and change of color in this example indicates that a chemical change occurred.

Item 15 *asks students to determine what a solid that forms from a solution during a chemical reaction is called.*

A **Incorrect.** A solid that forms from a solution during a chemical reaction can be an element, but the solid does not have to be an element. Therefore, this statement is not the best answer.

B **Correct.** A solid that forms from a solution during a chemical reaction is called a precipitate.

C **Incorrect.** A solid that forms from a solution during a chemical reaction can be a mixture, but the solid does not have to be a mixture. Therefore, this statement is not the best answer.

D **Incorrect.** A bond holds atoms together; therefore, a solid that forms from a solution during a chemical reaction cannot be called a bond.

Item 16 *asks students to describe a preservative.*

F **Correct.** The preservative slows the rate of a reaction or the rate of decay. An inhibitor is something that slows the rate of a reaction; therefore, the preservative acts as an inhibitor.

G **Incorrect.** An enzyme acts as a catalyst in an organism or an enzyme speeds up a reaction in an organism. Therefore, the preservative cannot be an enzyme.

H **Incorrect.** Fuel is a reactant and does not change the rate of a reaction.

J **Incorrect.** A catalyst speeds up a reaction, so the preservative cannot be a catalyst.

Item 17 *asks students to choose the chemical equation that is properly balanced.*

A **Incorrect.** This equation has two oxygen atoms on the left side of the chemical equation and three oxygen atoms on the right side of the chemical equation.

B **Correct.** This equation has 4 hydrogen atoms and 4 oxygen atoms on both sides of the chemical equation.

C **Incorrect.** This equation has 6 oxygen atoms on the left side of the chemical equation and 5 oxygen atoms on the right side of the chemical equation.

D **Incorrect.** This equation has 4 hydrogen and 4 oxygen atoms on the left side of the chemical equation and 2 hydrogen and 5 oxygen atoms on the right side of the chemical equation.

Item 19 *asks students to interpret data from a graph.*

A **Correct.** In an endothermic reaction, energy is absorbed by the reaction, causing a drop in temperature.

B **Incorrect.** In an exothermic reaction, energy is released by the reaction, causing a rise in temperature.

C **Incorrect.** No equation is given for this chemical reaction, so it is not possible to tell whether the equation is unbalanced.

D **Incorrect.** Combustion would involve the release of energy, causing a rise in temperature.

Item 20 *asks students to tell what the law of conservation of energy means.*

F **Incorrect.** Energy cannot be created or destroyed; however, it can be converted from one form of energy to another.

G **Correct.** The law of conservation of energy states that energy cannot be created or destroyed.

H **Incorrect.** This statement is the definition of an exothermic reaction.

J **Incorrect.** This statement is the definition of an endothermic reaction.