Chemistry Practice Test

Instructions to students

- You have 70 minutes to complete the test.
- Please answer all questions in the spaces provided.
- There is to be no talking during the test.

Marks

Section I: Multiple-choice questions:	15 marks
Section II: Short-answer questions:	26 marks
Section III: Extended-response questions:	9 marks
Total:	50 marks

Name: _____	Score: /50 Grade: %
Comments:	

Section I: Multiple-choice questions

1 Which one of the following can be found in the nucleus of an atom?

A. Protons
B. Electrons
C. Hydrogen
D. Isotope

2 The mass number of an atom is the total number of:

A. protons and electrons in an atom.
B. protons and neutrons in an atom.
C. protons in an atom.
D. electrons in an atom.

3 The charge of an atom is always:

A. positive.
B. greater than the charge of its nucleus.
C. neutral.
D. negative.

4 Which of the following statements about atoms is true?

A. The number of neutrons found in the nucleus of an atom is always the same.
B. Protons circle the nucleus all the time.
C. Neutrons and protons are found in the nucleus with the electrons.
D. An atom is mostly empty space.

5 What is the electronic configuration of a chlorine atom? Chlorine has an atomic number of 17.

A. 2, 10, 5
B. 2, 8, 7
C. 2, 2, 2, 2, 2, 2, 2, 2, 1
D. 8, 8, 1

6 How many valence electrons does a carbon atom have?

A. 4
B. 2
C. 6
D. 1

7 A negatively charged ion is called:

A. a cation.
B. an element.
C. an isotope.
D. an anion.

8 Which one of the following represents an example of a word equation for a combustion reaction?

A. carbon dioxide + oxygen → carbon + water
B. $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$
C. hydrochloric acid + oxygen → carbon dioxide + water
D. methane + oxygen → carbon dioxide + water

9 Neutralisation reactions between acids and bases can be generalised by which one of the following word equations?

A. acid + base → salt + hydrogen + water
B. acid + base → water
C. acid + base → salt + water
D. acid + base → salt + carbon dioxide + water

10 On the pH scale of acidity:

A. neutral substances are 7, basic substances are less than 7 and acidic substances are greater than 7.
B. neutral substances are 7, acidic substances are 0 and basic substances are 14.
C. neutral substances are 0, acidic substances are between 0 and 7, and basic substances are greater than 7.
D. neutral substances are 7, acidic substances are less than 7 and basic substances are greater than 7.

11 An indicator:

A. is a base that dissolves in water.
B. is a substance that changes colour in the presence of an acid or a base.
C. neutralises an acid.
D. determines whether a substance is an acid or a base by taste or smell.

12 The metal magnesium reacts with hydrochloric acid to produce magnesium chloride and one other substance. The other product is:

A. salt.
B. carbon dioxide gas.
C. water.
D. hydrogen gas.

13 A chemical equation shows:

A. the chemical formulas of the reactants and the products.
B. all the atoms involved in the reaction and how they rearrange into the products.
C. all the atoms in the compounds of the reactants, but not the products.
D. the names of the reactants and the products in words.

14 Chemical reactions that release energy, often in the form of heat, are called:

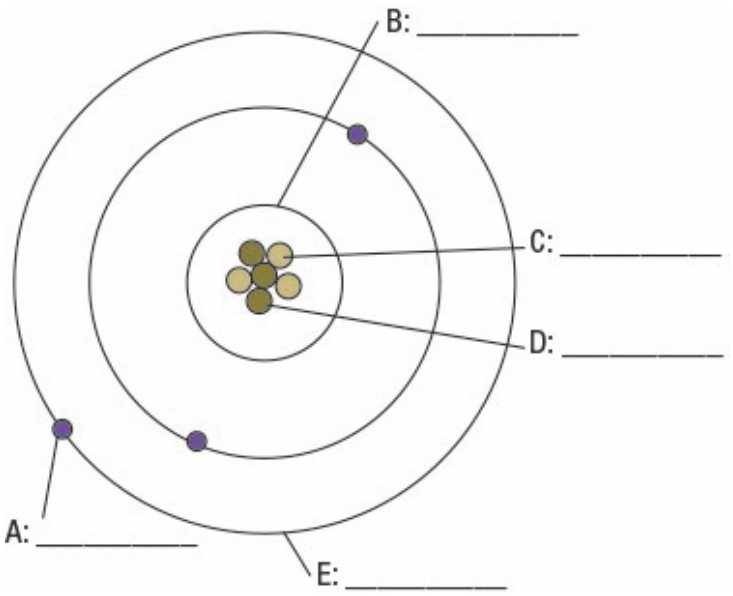
A. extrathermic reactions.
B. intrathermic reactions.
C. endothermic reactions.
D. exothermic reactions.

15 Hydrochloric acid (HCl) is an example of a:

A. weak acid.
B. strong acid.
C. weak base.
D. strong base.

Section II: Short-answer questions

1. a. Label the parts of an atom on the diagram below. (5 marks)



b. This model of an atom is of which element? (1 mark)

_____

2. Describe how an atom changes if you change the number of: (3 marks)

a. electrons

_____

_____

b. neutrons

_____

_____

c. protons.

_____

_____

3. Write the atomic number, mass number and electron configuration of potassium. (3 marks)

_____

_____

_____

4. Complete the table below by filling in the blank spaces. (3 marks)

Atom / Ion	Symbol	Atomic number	Mass number	Protons	Neutrons	Electrons	Electron configuration
Sodium ion	Na^+		23			10	
Sodium atom	Na	11		11	12		2, 8, 1

5. You tested an unknown substance with universal indicator and it turned a red-orange colour. Identify whether the substance is acidic, basic or neutral. (1 mark)

_____

_____

6. Examine the chemical equation shown below.

$$Mg(s) + O_2(g) \rightarrow MgO(s)$$

a. Identify whether or not it is balanced, and justify your choice. (2 marks)

_____

_____

_____

b. Write a matching word equation. (1 mark)

_____

c. Identify the type of reaction that has taken place. (1 mark)

_____

7.Write the word equation for the following chemical equation and identify the type of reaction that is taking place. (2 marks)

$$CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(g)$$

_____

_____

_____

8. Balance the following chemical equation: (1 mark)

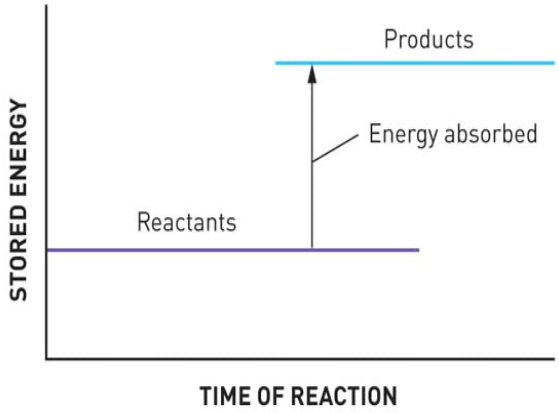
_____ Na + _____ H_2O → _____ NaOH + _____ H_2

9. Identify whether the graph below shows a reaction that is an endothermic or an exothermic reaction. Justify your decision. (3 marks)

_____

_____

_____



Section III: Extended-response questions

1. Acid reactions often involve bases, metals or metal carbonates. Explain how you can distinguish the type of reaction by the products that are formed. Explain how you would identify any gas products. (5 marks)

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_____

_____

2. Explain why oxygen atoms ionise to form the oxide ion with a charge of –2. Identify whether oxide is an anion or a cation. (4 marks)

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