**NAME………………………………………………. CLASS…….ADM NO…….**

**ANESTAR SCHOOLS**

**CHEMISTRY**

**TIME: 2 HOURS**

**FORM TWO**

**OPENER EXAMINATION: TERM 2 2024**

**INSTRUCTIONS.**

* Answer all the questions in the spaces provided.
1. a. Distinguish between atomic number and mass number. (2mks)

b) Which of the following pairs of atoms represent isotopes. Give a reason for your answer. (2mks)

35

17

37

17

1. X and Y

228

88

228

89

1. W and Z
2. State two reasons why we use the non-luminous flame in the laboratory instead of the luminous flame. (2mks)
3. The figure below, shows a paper chromatogram for mixtures.
4. Label the parts. (2mks)

X

Y

1. Which substance is present in C? Explain. (1mk)
2. Write a balanced chemical equation to represent the reaction between potassium carbonate with dilute hydrochloric acid. (1mk)
3. Explain why graphite conducts electricity while diamond does not yet they all have giant structures. (2mks)
4. The apparatus below was used to separate a mixture of water and diesel oil.
5. What is the name of the apparatus? (1mk)
6. Identify the water and diesel oil and give a reason for your answer. (1mk)
7. Ammonium ion has the following structure.

H

N

H

H

H

Label on the structure:

1. Covalent bond. (1mk)
2. Coordinate bond (1mk)
3. The grid below represents part of the periodic table. Study it and answer the questions that follow. The letters are not the actual symbols of the elements.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| A  |  |  |  | B  |  | C  |  |
|  | D  |  | E  |  | F  | G |  |
| H  |  |  |  |  |  |  |  |  |

1. Select the most reactive metal. Explain. (2mks)
2. Select an element that can form an ion with a charge of 3-. (1mk)
3. Select an alkaline earth metal. (1mk)
4. Which group 1 element has the highest first ionization energy? Explain. (2mks)
5. Hydrogen gas can be prepared by passing steam over heated magnesium ribbon as shown in.
6. Write an equation for the reaction that produces hydrogen gas. (1mk)
7. Identify the method of collecting the gas and explain why it is possible to collect using this method. (2mks)
8. a. State any four differences between luminous and non-luminous flames. (4mks)

b. Why are most of the apparatus in chemistry laboratories made of glass? (3mks)

c. Name two apparatus used for accurate measurement of volume. (2mks)

1. The set-up below can be used to prepare oxygen gas. Study it and answer the questions that follow.
2. Identify x. (1mk)
3. What property of oxygen makes it possible to be collected as shown in the above set up? (1mk)
4. State three uses of oxygen. (3mks)
5. Write a word equation explaining how oxygen is collected using the above method. (2mks)
6. Why is calcium more reactive than Beryllium? (2mks)
7. Five solutions were tested with universal indicators and their pH values recorded.

|  |  |
| --- | --- |
| **Solution**  | **pH value** |
| A  | 11 |
| B  | 2 |
| C | 6 |
| D  | 7 |
| E  | 13 |

1. Which solution is a strong acid? (1mk)
2. Which solution is a weak acid? (1mk)
3. Which solution is neutral? (1mk)
4. Which solution is a strong base? (1mk)
5. Which solution is a weak base? (1mk)
6. Give a reason why phosphorous is stored under water? (2mks)
7. The following table gives a summary of some properties of elements P, Q,R and S. The letters do not represent the actual symbols of the elements. Study it and answer the questions that follow.

|  |  |  |
| --- | --- | --- |
| **Element**  | **Electron arrangement**  | **Valency**  |
| P  | 2.2 |  |
| Q  | 2.7 |  |
| R | 2.8.2 |  |
| S  | 2.8.8.2 |  |

1. Fill in the valences of the above elements. (4mks)
2. Which two elements have similar chemical properties. Explain. (2mks)
3. What is the most likely formula of a carbonate of S? (1mk)
4. Identify the element which is a non metal. (1mk)
5. With an explanation, state the group and period to which the element in (i) above belongs. (3mks)

12

6

14

1. Atoms of element x exist as X, and X

6

1. What name is given to the two types if atoms. (1mk)
2. Use dot(.) and (x) diagrams to illustrate the atomic structure of x. (2mks)
3. Write the electron configuration of the atom in (b) hence write the formula of the compound formed when it combines oxygen (O=8) (2mks)
4. Equal volumes of water were put in 100cm3 glass beaker and heated for 5minutes using Bunsen burner flames. It was observed that the water in beaker (I) as registered a higher temperature than in beaker (II).
5. Name the flame used to heat beaker (I) explain your answer. (2mks)
6. State the condition which the flame that was used to heat beaker (II) was produced. (1mk)
7. Give two uses of hydrogen gas. (1mk)