**HOLA SECONDARY SCHOOL**

**MID TERM EXAMINATION**

**CHEMISTRY**

**YEAR 2014**

**TERM ONE**

**FORM 2**

**TIME:**

**NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_CLASS\_\_\_\_\_\_\_\_\_ADM/NO.\_\_\_\_\_\_\_\_\_\_\_**

**INSTRUCTIONS: ATTEMPT ALL QUESTIONS IN THE SPACES PROVIDED.**

1. Element X has two isotopes 33 and 30

 16 16

1. What is meant by the term isotope. (2mks)
2. Give the composition of the nucleus of each isotope. (2mks)

33

16

30

16

1. Draw the structure of atom 30 (1mk)

 16

1. The diagram below represents part of the periodic table. Use it and answer the questions that follow. Letters do not represent actual symbols.

|  |  |  |
| --- | --- | --- |
|  |  |  |
| M |  |  |  |  | Q |  |  |  |
| T | V |  | W |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

1. Write the electronic arrangement for the neutral atom of W. (1mk)
2. Write an equation between V and Q. (2mks)
3. How do the ionization energies of the element M and T compare. Explain. (2mks)
4. What is the chemical name of which element M and T belong. (1mk)
5. The table below gives some properties of three elements in group (VIII) of the periodic table. Study it and answer the questions that follow:

|  |  |  |  |
| --- | --- | --- | --- |
| **Element** | **Atomic no.** | **MP(oc)** | **BP(oc)** |
| Chlorine | 17 | -101 | 134.7 |
| Bromine | 35 | -7 | 58.8 |
| Iodine | 53 | 114 | 184 |

1. Which element is in liquid form at room temperature? Give a reason. (2mks)
2. Explain why the boiling point of iodine is much higher than that of chlorine. (2mks)
3. The table below give the number of electrons, protons and neutrons in substance X, Y and Z. Study it and answer the questions that follows.

|  |  |  |  |
| --- | --- | --- | --- |
| **Substance** | **Electrons** | **Protons** | **Neutrons** |
| X | 10 | 10 | 10 |
| Y | 10 | 8 | 10 |
| Z | 8 | 8 | 8 |

1. Which letter represent an ion? (1mk)
2. Which of the substances are isotopes? Give a reason. (2mks)
3. State the differences between a proton and electron. (3mks)
4. Write the electronic configuration for X. (1mk)
5. Why do you think element z can be a neutral atom? (1mk)
6. The element D has three isotopes whose natural abundances and mass are given in the table below.

|  |  |
| --- | --- |
| **Mass Number** | **Abundance %** |
| 28 | 92.2 |
| 29 | 4.7 |
| 30 | 3.2 |

Calculate the relative atomic mass of element A. (3mks)

6.

|  |  |  |
| --- | --- | --- |
| **Element** | **Atomic Radius**  | **Ionic radius** |
| S | 0.114 | 0.195 |
| Q | 0072 | 0.136 |
| R | 0.133 | 0.216 |
| P | 0.099 | 0.181 |

1. Would this elements form part of a metallic group or non-metalic group? (Explain. (2mks)
2. Arrange them starting with the first member the way they would appear in the periodic table. (2mks)
3. Suggest an element likely to be the most reactive. Explain. (2mks)

7. Write the correct chemical symbols of the following elements.

Zinc

Magnesium

Sulphur

Potassium

Calcium. (5mks)

8. Balance the following chemical equations.

1. Fe + O2 Fe3 O4
2. CU(NO3)2  CuO + NO2 + O2
3. CaCO3 + HNO3 Ca(NO3)2 + CO2 + H2O
4. H2S + O2 SO2 + H2O
5. C2H6 + O2 CO2 + H2O (5mks)

9. Write the chemical formulae of the following compounds.

Zinc Sulphate

Magnsium Carbonate

Aluminium Nitrate

Lithium Chloride

Ammonium Nitrate (5mks)

10. Describe an experiment on how the following mixture would be separated. A mixture of sand, salt and Ammonium chloride. (3mks)

11. Name the elements present in the following compounds.

1. Sodium bromide
2. Zinc sulphide
3. Lead oxide
4. Magnesium Nitride
5. Potassium Iodide. (5mks)

12. State three examples of commercial acid base indicators that you know. (3mks)

13. Oxygen can be obtained industrially by the fractional distillation of liquefied air. Describe how the oxygen can be industrially extracted from air. (5mks)

14. State two commercial uses of hydrogen gas. (2mks)

15. Using the kinetic theory of matter explain why gases are compressible. (2mks)

 16. Define the following terms as used in chemistry.

a) Melting Point (1mk) b) Boiling Point. (1mk)