**DECEMBER ASSIGNMENT-2022**

**CHEMISTRY FORM TWO**

1. Study the information in the **Table 1**below and answer the questions that follow. The letters do not represent actual symbols of the elements.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Element** | **Atomic Number** | **Melting Point** **(°C)** | **Boiling Point** **( °C)** | **Atomic radii** | **Ionic radii** |
| P | 12 | 650 | 1110 | 0.126 | 0.124 |
| Q | 13 | 660 | 2470 | 0.125 | 0.120 |
| R | 15 | 44.2 and 590 | 280 | 0.111 | 0.119 |
| S | 16 | 113 and 119 | 445 | 0.103 | 0.109 |
| T | 17 | -101 | -35 | 0.109 | 0.120 |
| U | 19 | 63.5 | 775 | 0.167 | 0.160 |

 (a) Write the electronic configuration of an ion of element T and U. (1Mark.

b) Why do the elements represented by R and S have two values of melting point (1Mark

c) Explain why the boiling point and melting point of element Q is higher than that of element T in terms of structure and bonding. (2Marks)

d) Select an element:

(i) Which is a metal? Explain (2Mark

(ii) That is a gas at room temperature. (1Mark

e) Explain why ionic radius of R is bigger than its atomic radius. (1Mark)

f) Give the formulae of Sulphate of element Q ----------------------------------- (lMark)

2. The table below gives information on four elements represented by K, L, M and N. Study it

 and answer the questions that follow. The letters do not represent the actual symbols of the

 elements.

|  |  |  |  |
| --- | --- | --- | --- |
| **Element** | **Electron arrangement** | **Atomic radius** | **Ionic radius**  |
| K | 2, 8, 2 | 0.136 | 0.065 |
| L | 2, 8, 7 | 0.099 | 0.181 |
| M | 2, 8, 8, 1 | 0.203 | 0.133 |
| N | 2, 8, 8, 2 | 0.174 | 0.099 |

1. Which **two** elements have similar chemical properties? Explain. (2mks)

 b) The table below contains information regarding a species of helium.

|  |  |  |
| --- | --- | --- |
| Species  | Number of electrons | Number of neutrons |
|  |  |  |

Complete the table by indicating the numbers of electrons and neutrons. (2 mks)

3. Use the information in the table below to answer the questions that follow. The letters do not

 represent the actual symbols of the elements.

 Elements A B C D E

 Atomic numbers 12 6 4 6 15

 Mass numbers 24 12 9 13 31

 a) Which two letters represent the same element. Give a reason. (2mks)

 b) Calculate the number of neutrons in Element C. (1mk)

 c) What is the role of neutrons in the nucleus. (1mk)

4.Using crosses(x) to represent electrons,show the electron distribution in the following
 species. (3mks)

 (i)Sodium atom Na=11

 (ii)Chloride ion Cl=17

 ( iii) Calcium atom Ca =20

5. Write balanced equations for the following equations; (3mks)

 (i)Magnesium and fluorine

 ii)Sodium and Oxygen

 iii)Magnesuim and nitrogen

6. Explain the following observations

 a) Noble gases are generally unreactive. (1mk)

 b) Aluminium conducts electricity better than sodium. (1mk)

 c) An atom is said to be electrically neutral. (1mk)

 d) Graphite conducts electricity. Explain. (1 mk)

7) .An element x belongs to group (IV) and period 3 of the periodic table. The two isotopes of x are 30X and QX. If it’s RAM is 28.3. Calculate the number of neutrons in the isotope QX if its abundance is 90%. (3 mks)

8) Molten sodium chloride and sodium are good conductors of electricity. State the difference in the mode of conductivity. (2 mks)

9) .An element in period 3 shows both metallic and non-metallic properties.

1. Name the element. (1 mk
2. Write its electron arrangement. (1 mk
3. It has the highest melting point in the period. Explain. (1 mk)

10) 1. Study the table below and answer the questions that follow. The letters do not show the actual symbol:-

|  |  |
| --- | --- |
| Ion | Electron Arrangement |
| R2+ | 2.8.8 |
| S2- | 2.8 |

* 1. Write the electron arrangement of each atom.
	2. Write the formula of the oxide of R and Chloride of S