**NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ADM/NO\_\_\_\_\_\_\_\_\_\_\_**

**DATE\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ FORM\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**CHEMISTRY**

**TERM TWO 2016**

**FORM 2**

**TIME:**

**HOLA SECONDARY SCHOOL**

**MID TERM EXAMINATION**

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**INSTRUCTIONS: ANSWER ALL QUESTIONS**

1a) Air is a mixture. Explain. (2mks)

b) Study the scheme below and use it to answer question that follow.

Air

Process Y

Process X

KOH

Cool to - 25

Electrostatic precipitation

 A 1st to distill Liquid Air

 C

 B 3rd to distill

 2nd to distill

1. State the role of the following stages used in preparing liquid Air.
2. Electrostatics precipitation (1mk)
3. Cooling to -25oc (1mk)
4. KOH (1mk)
5. Process X (1mk)
6. Name
7. Process Y (1mk)
8. Substance A (1mk)
9. State one use of substance B. (1mk)
10. Show the bonding in C using a dot (.) and cross (x) diagram. (2mks)

2. Below is a heating curve of pure ice from -15oc to 110oc.

 F

 D E

 B C

1. Explain the following parts of the graph.
2. DE (1mk)
3. CD (1mk)
4. DC (1mk)
5. Identify the state of matter along the graph at:

BC (1mk)

EF (1mk)

1. On the graph, sketch a graph that should be expected if some sodium chloride was added to the solid ice. Explain. (3mks)
2. Briefly explain the terms below and state one industrial applicants of each.
3. Solvent extraction (3mks)

ii) Fractional distillation. (3mks)

3. Study the information given in the table below and answer the questions that follow. The letters do not represent the actual symbols of the elements.

|  |  |  |
| --- | --- | --- |
| **Element** | **Atomic number** | **Boiling point oc** |
| ABCDE | 111381016 | 8902470-183-246119 |

1. Select the elements which belong to
2. same group (1mk)
3. period 2 (1mk)

b) Which element

1. Exist in gaseous state at room temperature. Explain. (3mks)
2. Does not form a chloride? Explain. (2mks)

c) Write the

1. Formula for the sulphate of B. (1mk)
2. Equation for the reaction between element A and C. (2mks)
3. What type of bond would exist in a compound formed between elements E and C. (1mk)
4. Give a reason for the answer in d (i) above. (1mk)

4. The table below shows the atomic and ionic radii of members in the same group in the periodic table. Study it and answer the questions that follow

|  |  |  |
| --- | --- | --- |
| Element | Atomic radius (nm) | Ionic radius (nm) |
| P | 0.064 | 0.136 |
| Q | 0.099 | 0.181 |
| R | 0.114 | 0.195 |
| S | 0.133 | 0.216 |

1. Is this a metallic or a non-metallic group? Explain. (3mks)
2. Which element has the lowest atomic number? (1mk)
3. Which element would be the most reactive? Explain. (3mks)
4. Which element has the lowest ionization energy? Explain. (3mks)
5. How do the atomic radii compare down the group? Explain. (3mks)

5. Describe how a sample of pure sodium chloride can be obtained from a mixture of iodine, sodium chloride and sand. (3mks)

6. If air is bubbled through water pH changes gradually from 7 to 5. Explain this observations. (2mks)

7. The set up below was used to prepare oxygen gas.

1. Write an equation for the reaction taking place in the flask. (2mks)
2. Manganase (iv) oxide is used as a catalyst. Define the term catalyst. (1mk)
3. What is the name given to the method of gas collection shown above? (1mk)
4. Describe the chemical test for oxygen gas. (2mks)
5. Outline the uses of oxygen gas. (2mks)

8. A student arranged the apparatus as shown below to burn a candle wax.

At the beginning of sodium hydroxide the experiment

1. Why si NaOH solution used in the trough instead of water? (1mk)
2. State and explain two observations that would be made at the end of the experiment. (3mks)

1. If the initial volume of air in the measuring cylinder was 90cm3 and this decreased to 70cme3, calculate the % of air used up in the experiment. (3mks)

9. Identify any two elements that exist on the earth. (1mk)