FORM 3 TERM 1 OPENER CHEMISTRY

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

CLASS…………………………………………… **SIGN**……………………….

DATE………………………

DURATION: 2 HOURS

1. Differentiate between the following terms as used in chemistry.

a. Temporary change and physical change. (1mk)

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b. Atomic number and mass number. (1mk)

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c. Ionization energy and electron affinity. (2mks)

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2. Is air a mixture or a compound? Explain. (2mks)

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3. Oxygen can be prepared from the decomposition of hydrogen peroxide in the presence of a catalyst.

a. Name the catalyst used. (1mk)

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b. Write an equation for the formation of oxygen gas. (1mk)

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c. State the simple test for oxygen gas. (1mk)

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4. The apparatus below were used to determine the volume of oxygen in air. About 200cm^3 of air was passed repeatedly from syringe **A** to syringe **B** over heated copper turnings as shown in the diagram. After sometime, the volume of air in the syringe **A** was 160cm^3 and syringe **B** 0cm$^{3.}$

Copper turnings   Pressure tubing

Syringe A   Syringe B

200 cm³ of air   Heat   0 cm³
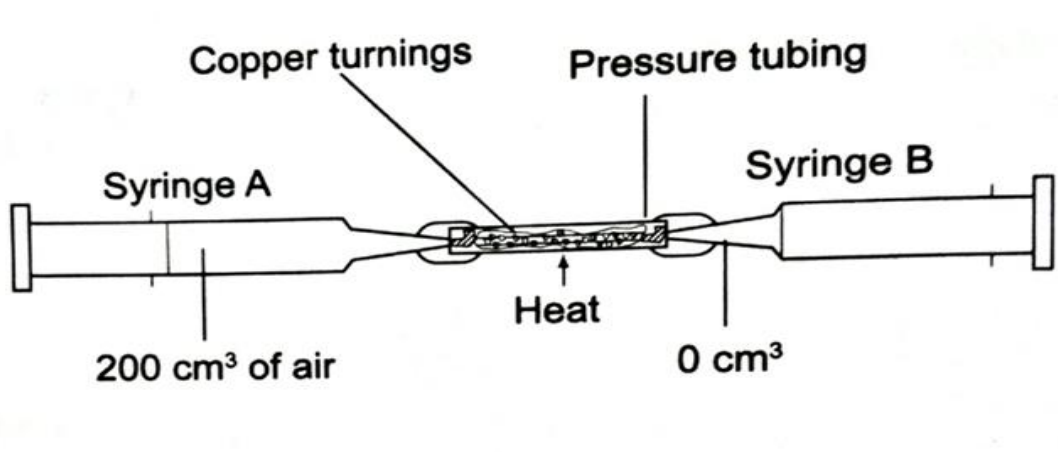
a. Write a chemical equation for the reaction that took place in the combustion tube. (1mk)

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b. Calculate the percentage of oxygen in the initial sample of air. (3mks)

c. State two possible sources of errors in the experiment. (2mks)

5. An experiment was carried out to determine the presence of substance **P**, **Q**, **R** and mixture **T**. The results obtained are shown in the figure below.
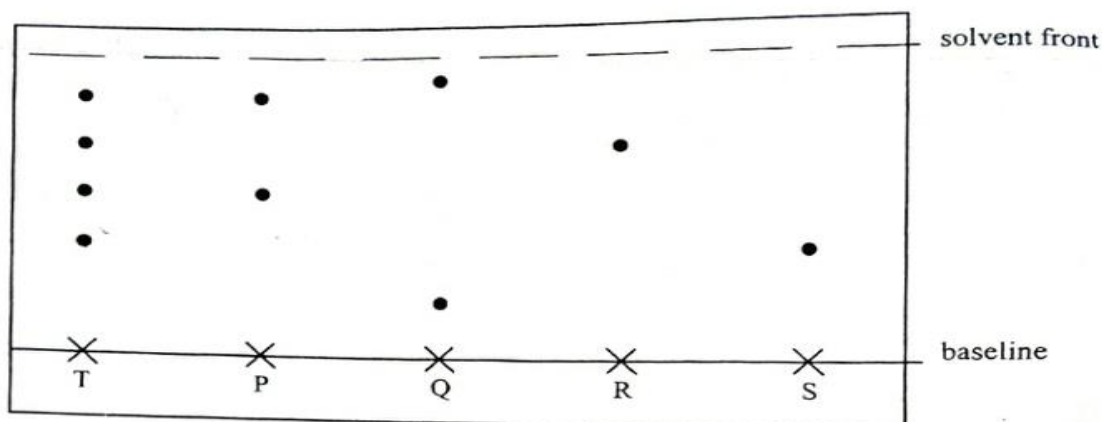
a. Name the method of separation illustrated above. (1mk

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....

....

b. Select :

I. One substance which contains a component **not** present in **T**. (1mk)

II. A substance which is least soluble in the solvent used .(1mk)

6. Give the valencies of the **cation** and **anion** in each of the following compounds:

a) Zinc sulphate (1mk)

....

....

b) Magnesium carbonate (1mk)

c) ....

....

....

d) Aluminum nitrate (1mk)

e) ....

....

....

7. The diagram below represents a grid that is part of the periodic table. Study it and answer the questions that follow. The letters are not the actual symbols of the elements.

a) Write the electron arrangement of element **C**. (1mk)

b) ....
....
....

c) On the grid provided, show with a tick (✓) the position of the element **D** whose atomic number is 18 (1mk)

....
....

d) Element **E** is more reactive than **A**. Explain. (1mk)

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....

e) State any two uses of element **D**.(2mks)

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....
....

f) Write a balanced chemical equation for the reaction of element **A** and element **B**. (1mk)

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....

....

g) Use dot (•) and cross (**X**) diagram draw the structure of the compound formed between the reaction of element **A** and element **B.** (2mks)

8. Explain the following observations :

a. The melting point of sodium is higher that of potassium (2mks)

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b. Sodium chloride solution conducts electric current while sugar does not (2mks)

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9. Define the term salt (1mk)

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a. Write an ionic equation between magnesium sulphate and lead (ll) nitrate solution. (2mks)

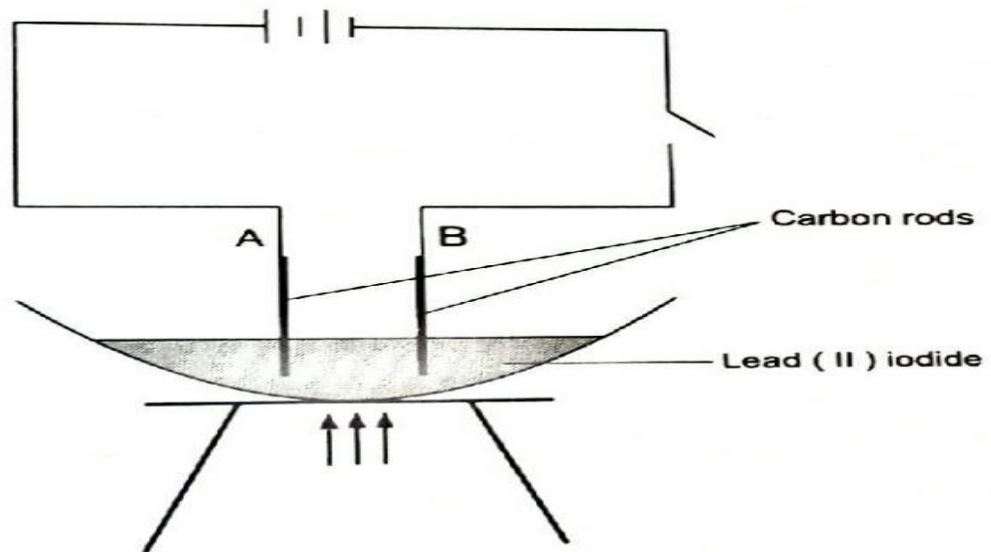..

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b. Describe an experiment on how you can use the above **(a)** reactants to prepare a sample of lead (ll) sulphate powder. (4mks)

10. The set up below was used to investigate the effect of electric current on the binary electrolyte (molten lead (ll) iodide)

a. W

binary electrolyte? Give another example (2 mks)

....

....

b. Identify the cathode and anode. Explain (2mks)

....

....

....

c. State what is observed at the:

I. cathode (1mk)

II. ....

....

....

III. Anode (1mk)

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....

d. Write the half equations for the reactions at the :

Anode (1mk)

....

....

Cathode (1mk)

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....

e. State any two applications of the process investigated above. (2mks)

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11. Define the term allotropy

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12. Name two main allotropes of carbon. (2mks)

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13. Give any three uses of carbon (3mks)

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14. A student at Victory Boy's High School wanted to prepare dry carbon (IV)oxide.

a. Identify and correct appropriately one mistake in the set up. (1mk+1mk)

b. Complete the set up to show how dry carbon (IV) oxide gas may be prepared and collected.
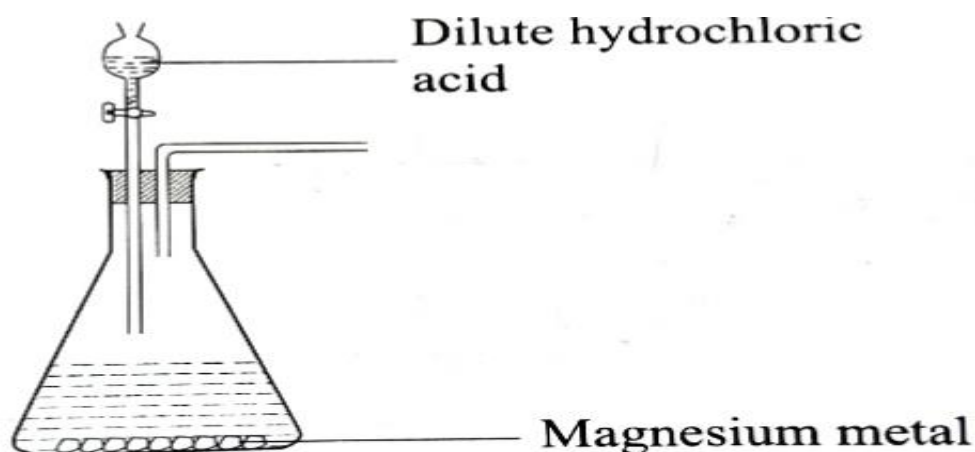
(3mks)

c. Write a balance chemical equation for the reaction that occurred in the conical flask for the preparation of carbon (IV) oxide. (1mk)

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d. Describe the chemical test of carbon (IV) oxide gas. (2mks)

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e. Give two uses of carbon (IV) oxide (2mks)

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15. What is the charge and oxidation number of the following ions.

a. **Copper (l) ion.**

Charge.................................... (1mk)

Oxidation number................................ (1mk)

b. **Lead (ll) ion**

Charge........................ (1mk)

Oxidation number...................... (1mk)

c. **Sulphide ion.**

Charge... (1mk)

Oxidation number......................... (1mk)

16. Element K (not actual symbol of element) has isotopes with relative abundances as shown below.

Calculate the relative atomic mass of element K (3mks)

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....
....
....

Isotope	Abundance %
$^{10}_{5}K$	18.69
$^{11}_{5}K$	81.28