FORM 3 END TERM 2 2020

CHEMISTRY PAPER 1

1. Name another gas which is used with oxygen in welding [1 Mk]

2. a. write the electronic configuration of calcium (atomic number 20) and magnesium (atomic number 12)

   Calcium…… [½ Mk]

   Magnesium…… [½ Mk]

   b. Why is calcium more reactive than magnesium? [2 Mks]

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3. The table below shows the relative atomic masses and the percentage abundance of the isotopes T_1 and T_2 of element T

	RAM	% abundance
T_1	62.93	69.09
T_2	64.93	30.91

   Calculate the relative atomic mass of element T [3 mks]

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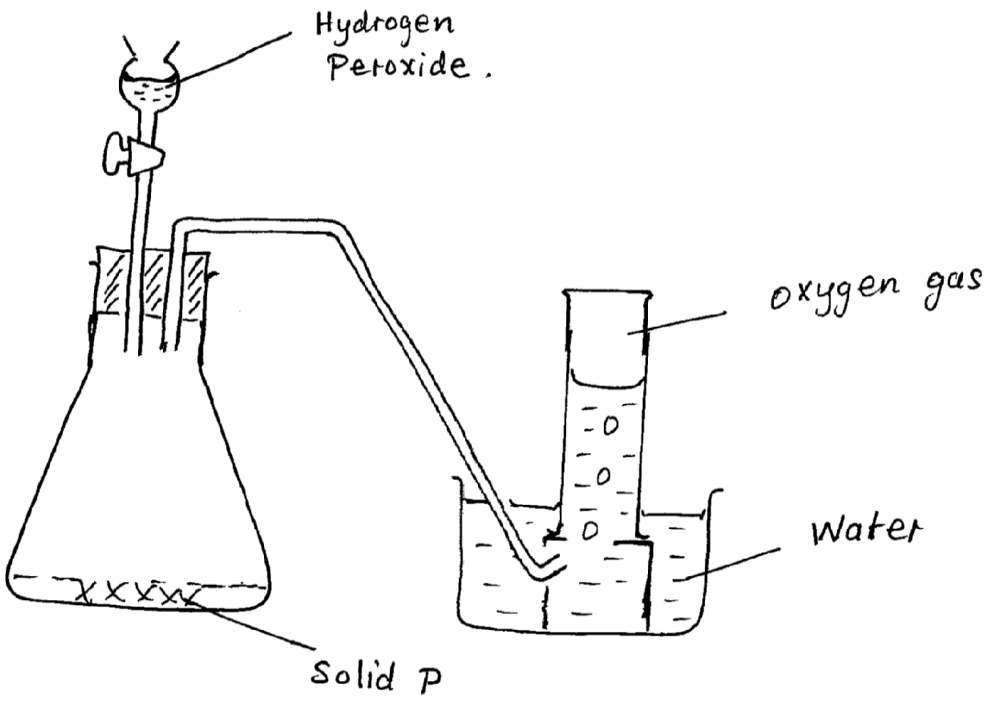
4. The diagram below is a set-up for the laboratory preparation of oxygen gas.



a. Name solid P.

……[1 mk]

b. Write an equation for the reaction that takes place in the conical flask

……[1 mk]

c. Give two commercial uses of oxygen [2 mks]

i. ……

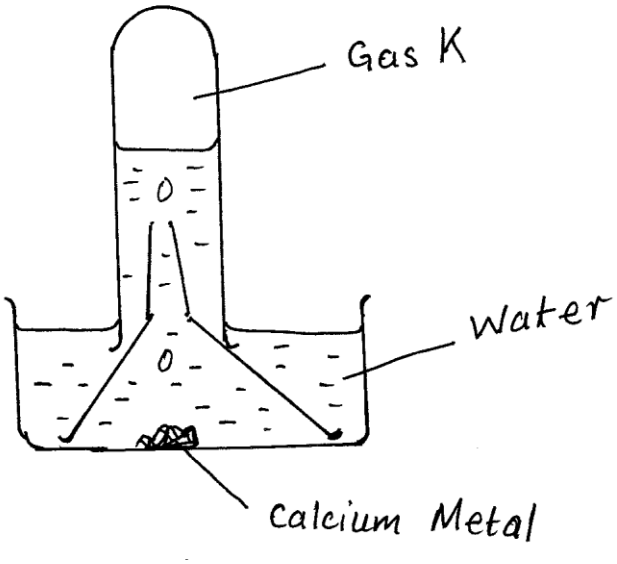
ii. ……

5. State two reasons why hydrogen is not commonly used as a fuel [2 mks]

i. ……

ii. ……

6. The figure shows a set-up by a form three student to prepare a certain gas



a. Write an equation for the formation of gas K [1 mk]

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b. Give one use of gas K in the industries [1 mk]

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c. Give one use of the resulting solution after the metal has reacted [1 mk]

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7. Draw a dot and cross diagram showing the bonding in a molecule of calcium oxide. Name the type of bond. [3 mks]

8. When 0.288g of an oxide of metal M was reduced using suitable reducing agent, 0.256 of pure metal was formed. Determine the empirical formula of the oxide of the metal M. [M=64 O=16] [4 mks]

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9. X+ is an ion with electronic configuration 2,8,8. Identify element X [1 mk]

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10. 20g of solid sodium hydroxide were dissolved in distilled water and made to 400cm^3. 30 cm^3 of this solution required 27 cm^3 of dilute sulphuric (iv) acid for complete reaction. [Na=23 O=16 H=1]

Determine

i. Moles of sodium hydroxide contained in 30 cm^3 of solution [2 mks]

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ii. Moles of sulphuric (iv) acid that reacted [2 mks]

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Concentration of the sulphuric (iv) acid in moles per litre [2 mks]

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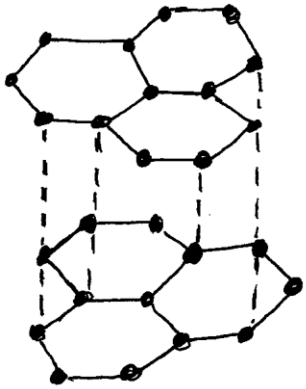
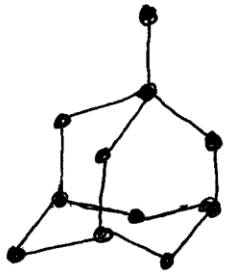
11. The diagram shows the structures of two allotropes of carbon. Study them and answer the questions that follow.



A



B

a. Name allotrope A and B [2 mks]

A……..

B……

b. Give two uses of allotrope B [2 mks]

i. ……

ii. ……

c. Which allotrope conducts electricity? Explain. [2 mks]

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12. An oxide of element F has the formula F_2O_5

a. Determine the oxidation state of F. [1 mk]

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b. In which group of the periodic table is element F? [1 mk]

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13. Explain how you would obtain solid sodium carbonate from a mixture of lead II carbonate and sodium carbonate. [3 mks]

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14. Give two properties of aluminum that makes it very suitable for making cooking utensils [2 mks]

    i. ……

    ii. ……

15. Write down an ionic equation for the reaction between dilute hydrochloric acid and calcium carbonate [3 mks]

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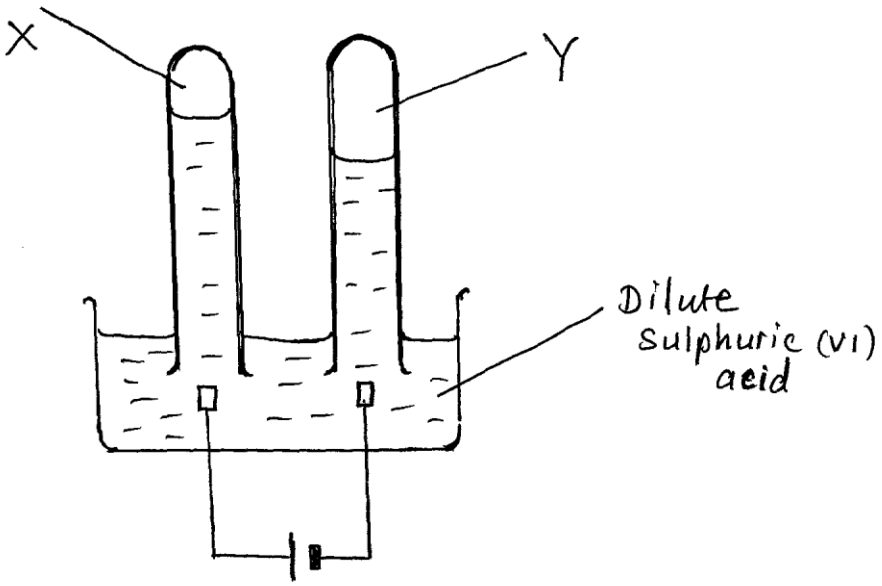
16. The diagram shows electric current passing through dilute sulphuric (iv)acid



a. On the diagram identify the cathode and the anode [2 mks]

b. Identify substances X and Y [2 mks]

X .....[1 mk]

Y .....[1 mk]

17. State and explain the change in mass that occur when following substances are separately heated in open crucibles [4 mks]

a. Copper metal.....

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b. Copper II nitrate.....

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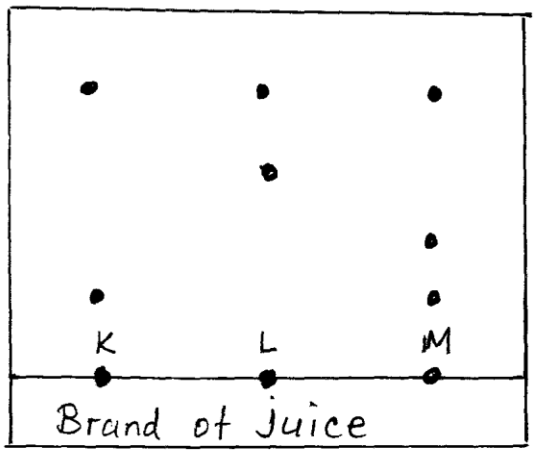
18. The diagram below represents a paper chromatograph for three brands of juices suspected to contain banned food colourings



The result showed presence of banned food colourings in L and M only

a. On the diagram
   i. Circle the spots which show the banned colourings [2 mks]
   ii. Show the solvent front [1 mk]

b. On the same diagram indicate and label the baseline [1 mk]

19. Determine the number of sodium ions contained in $25cm^3$ of 0.5M sodium carbonate solution [a=6.023×10^{23}] [3 mks]

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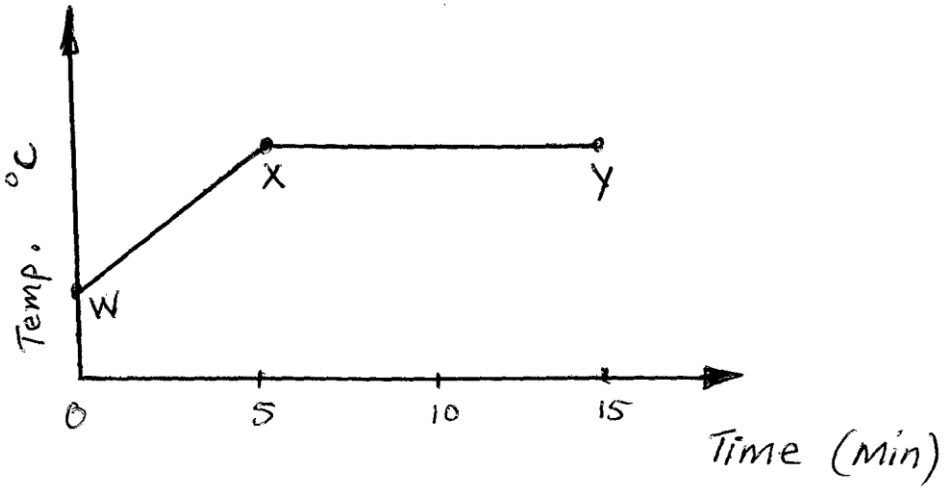
20. The graph below shows a curve obtained when water at 20 was heated for 15 mins.



a. What happens to the water molecules between points W and X [1 mk]

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b. In which part of the curve does a change of state occur? [1 mk]

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c. Explain why the temperature does not rise between points X and Y [1 mk]

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21. Write down the formula of the following compounds

i. Potassium manganate vii……[1mk]

ii. Aluminium oxide ……[1mk]

iii. Iron III chloride ……[1mk]

22. Write balanced equations for the following reactions

a. Reaction between sodium and excess oxygen [1mk]

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b. [1mk]

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a. Reaction between Zinc and hydrochloric acid [1mk]

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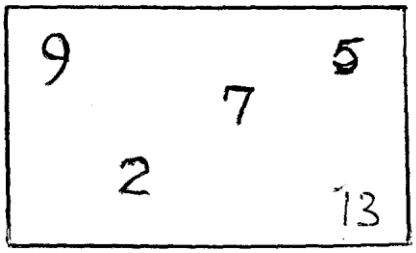
23. The diagram shows PH values for several substances.



Choose the likely PH value for,

i. Dilute Hydrochloric acid……[1mk]
ii. Calcium hydroxide……[1mk]
iii. Sodium hydroxide ……[1mk]
iv. Lemon juice……[1mk]

24. Briefly outline how you would obtain ethanol from a mixture of ethanol and water. [3mks]

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25. (a) What is rust? [1mkl]

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(b) Give two advantages of rusting.

(i) ……[1mk]
(ii)……[1mk]