

KCSE MOCKS

CHEMISTRY PAPER 1

Consists 3 KCSE Mock set Exams.
(Class of KCSE March 2021)

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PRE-MOCK 1

Name.....Adm.No.....

Index No...../.....

Class.....

Candidate's Signature..... Date.....

KCSE PRE-MOCK 1

(The Kenya Certificate of Secondary Education)

233/1

CHEMISTRY

Paper 1

(Theory)

Time 2 Hours

Instructions to Candidates

1. Write your name, admission number, class and index number in the spaces provided above.
2. Sign and write the date of the examination in the spaces provided
3. Answer all the questions in the spaces provided.
4. All working must be clearly shown.
5. Non-programmable silent electronic calculators and KNEC mathematical tables may be used.
5. This paper consists of 12 printed pages. Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

For Examiner's Use only

Questions	Maximum score	Candidates score
1 – 28	80	

1.Explain how a burette is suited to its function of accurate measurement of volume of liquids

(1 mark)

.....
.....

2. A mixture of two liquids **A** and **B** with densities of **2.34g/cm³** and **1.30g/cm³** respectively is to be separated .

(i) Describe how to efficiently obtain liquid **B** from the mixture . (2 marks)

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(ii) Name the type of mixture consisting of liquids **A and B** (1 mark)

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3. Nitrogen (I)oxide gas can be prepared in the laboratory using a mixture of ammonium chloride solution and sodium nitrate solution.

(a) The reaction occurs in two steps. State the two steps in the correct order. (2 marks)

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(b) State one use of nitrogen (I) oxide (1 mark)

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4.(a) Draw structural formulae of two positional isomers with molecular formula **C₄H₈**.

(2 marks)

(b) Study the equation below and answer the questions that follow.



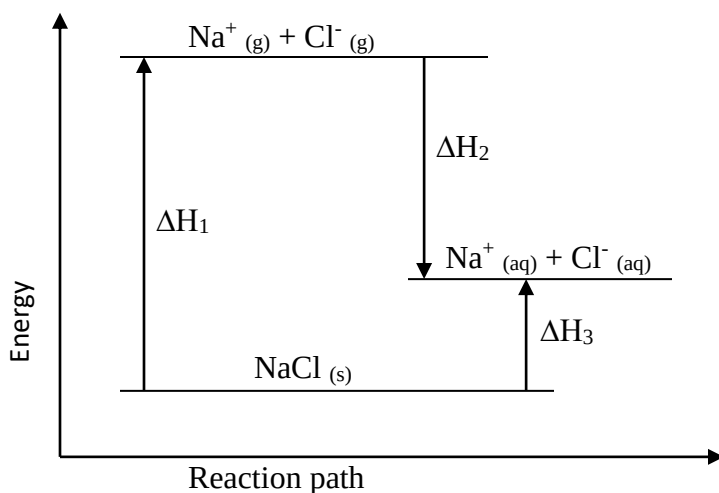
(i) State the condition under which this reaction occurs. (1 mark)

.....

(ii) Give the general name of this type of reaction. (1 mark)

.....

5. The diagram below shows the energy changes that occur when sodium chloride dissolves in water. Study it and answer the questions that follow.



a) What do ΔH_1 , ΔH_2 and ΔH_3 represent? (1½ mark)

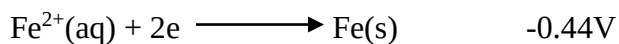
ΔH_1

ΔH_2

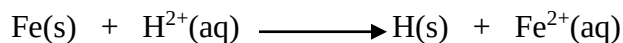
ΔH_3

b) Given that the lattice energy of $\text{NaCl}_{(s)}$ is -776 kJmol^{-1} and hydration energies of $\text{Na}^+_{(g)}$ and $\text{Cl}^-_{(g)}$ are -407 kJmol^{-1} and -364 kJmol^{-1} respectively. Calculate the heat of solution (ΔH_{sol}) of 1 mole $\text{NaCl}_{(s)}$. (1½ mark)

6. The standard electrode potentials of a metal **H** and **Iron** are given below.



Is the reaction below possible ? Show your working (2 marks)



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7. (a) Why is the percentage of carbon (IV) oxide in the atmosphere fairly constant? (1 mark)

.....
.....

(b) Calculate the volume of carbon(IV)oxide in 9,000 m³ of air contained in a room. (2 marks)

8. State two applications of using impurities to lower the melting point of substances. (2 marks)

.....
.....

9. a) Determine the percentage of nitrogen in ammonium nitrate fertilizer (N=14.0, H=1.0, O=16.0) (2 marks)

b) Give one negative effect of continuous use of nitrogenous fertilizers (1 mark)

.....
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.....

10. Study the table below and use it to answer the questions that follow. (The letters do not represent the actual symbols of the elements).

Element	S	P	Q	R	T
Atomic number	5	20	3	18	5
Atomic mass	10	40	7	40	11

(a) Select two letters that represent a pair of isotopes ? (1 mark)

.....

(b) Give the number of neutrons in an atom of element T . (1 mark)

.....

11. Dry ammonia gas was passed over heated copper(II) oxide.

(a) Write an equation for the reaction. (1 mark)

.....

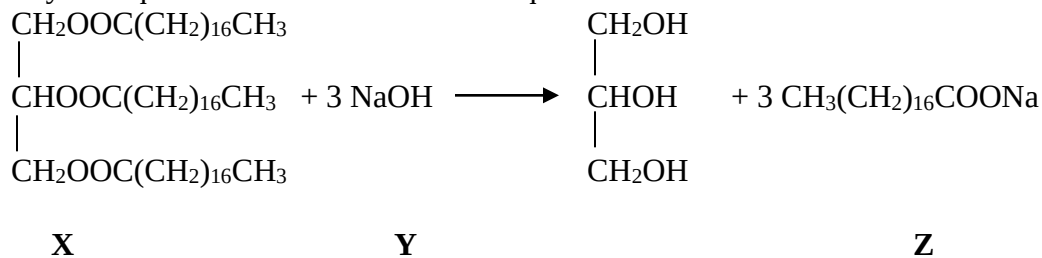
(b) Give the property of ammonia gas illustrated in the reaction above (1 mark)

.....

(c) Write the formula of a gas that can be used in place of ammonia gas in the reaction above (1 mark)

.....

12. Study the equation below and answer the questions that follow:



a) What type of reaction is this? (1 mark)

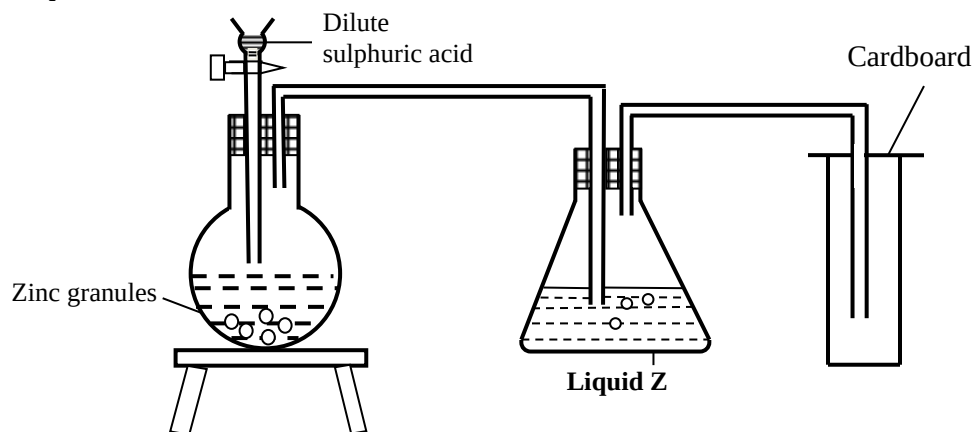
.....

b) What class of organic compounds does X belong? (1 mark)

.....

c) Explain the role of sodium chloride in the manufacture of soap. (1 mark)

13. The set up below was used to prepare dry hydrogen gas. Study it and answer the questions that follow.

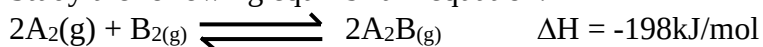


(i) Identify one mistake in the set-up above. (1 mark)

(ii) What is the role of Liquid Z? (1 mark)

(iii) Using an equation give one chemical property of hydrogen gas (1 mark)

14. Study the following equilibrium equation.



(a) Suggest two ways of increasing the yield of A_2B . (1 mark)

(b) Draw the energy level diagram for the backward reaction. (2 marks)

15 .A solution contains 5.3g of X_2CO_3 in 500 cm^3 of solution. 25.0 cm^3 of this solution required 20.0 cm^3 of 0.25M hydrochloric acid for complete neutralization.

The equation for the reaction is;



a) Calculate the concentration of X_2CO_3 solution in grams/dm^3 . (1 mark)

b) Find the molarity of X_2CO_3 solution. (1 mark)

c) Find the relative formula mass of X_2CO_3 hence calculate the relative atomic mass of **X**.
(C = 12, O = 16) (2 marks)

16. (a) State Graham's law of diffusion. (1 mark)

.....

(b) 100 cm^3 of Carbon (IV) Oxide diffuses through a porous plate in 30 seconds. Calculate the

time taken by 75 cm^3 of Nitrogen (IV) Oxide to diffuse through the same plate under similar conditions. (C = 12, O = 16, N = 14) (2 marks)

17. A student fetched water from a river in a limestone area. He used it for washing and realized that it did not lather easily. On boiling, the water lathered easily. When he added washing soda, it again lathered easily

(i) Name two compounds that are most likely to be present in the water (1 mark)

.....

(ii) Given that the structure of soap is $C_{17}H_{35}COONa$.

Explain by means of ionic equation how the above compounds prevent lathering. (1 mark)

.....

18. A student burnt magnesium ribbon in a gas jar full of sulphur (IV) oxide gas.

(i) State two observations made in the gas jar. (2 mark)

.....

(ii) Write an equation for the reaction that took place. (1 mark)

.....

19. A radioactive isotope **M** decays by emitting two alpha and a beta particle to form $^{206}_{83}\text{Y}$.

a) What was the atomic number of **M** (1 mark)

b) After 224 days $\frac{1}{16}$ of mass of **M** remained. Determine the half-life of **M**. (2 marks)

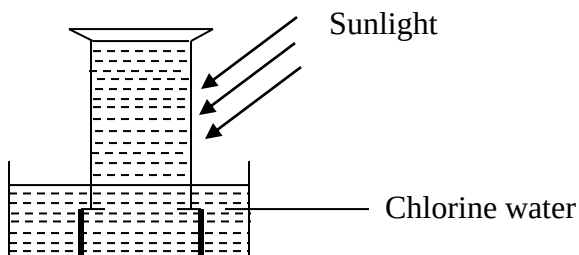
c) State one use of radioactivity in agriculture. (1 mark)

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20. (i) With the aid of a well labeled diagram, show that the almost colourless region of a non luminous flame consist of unburnt gases (1½ marks)

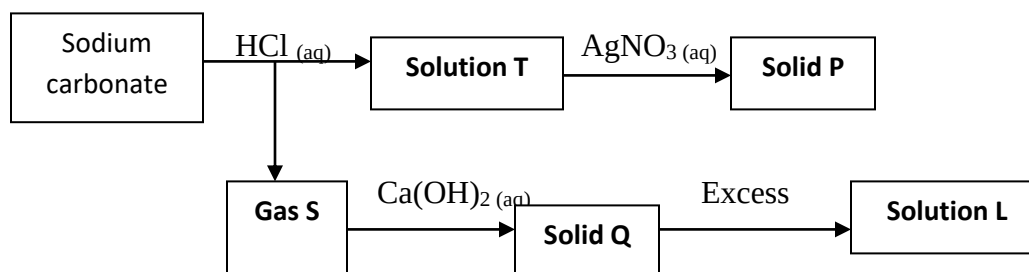
- (ii) Highlight the steps followed when lighting a Bunsen burner. (1½ marks)

21. The diagram below shows an experiment involving chlorine water.



- a) Chlorine water is a mixture of two acids. Explain using a chemical equation. (1 mark)
-
-
- b) State and explain the observation that was made after 24 hours. (2 marks)
-
-
-
-
- c) Write an equation for the reaction that took place in (b) above. (1 mark)
-
-

22. Study the flow chart below and use it to answer the questions that follow.



a) Identify substances L, P, Q and S.

(2 marks)

L
 P
 Q.....
 S.....

b) Write an ionic equation for the reaction between T and silver nitrate solution. (1 mark)

.....

23. a) Define solubility.

(1mark)

.....

b) In an experiment to determine the solubility of solid **W** in water at 40⁰c, the following results were obtained.

Mass of empty evaporating dish = 36.2g

Mass of evaporating dish + saturated solution = 52.4g.

Mass of evaporating dish + dry solid **W** = 40.4g

Use this data to calculate the solubility of **W** at 40⁰C .

(2 marks)

24. In terms of structure and bonding, explain why propane (RMM=44) is a gas at room temperature while ethanol (RMM=46) is a liquid at room temperature (2 marks)

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25. Explain why hard water flowing in lead pipes may be safer for drinking than soft water flowing in the same pipes. (2 marks)

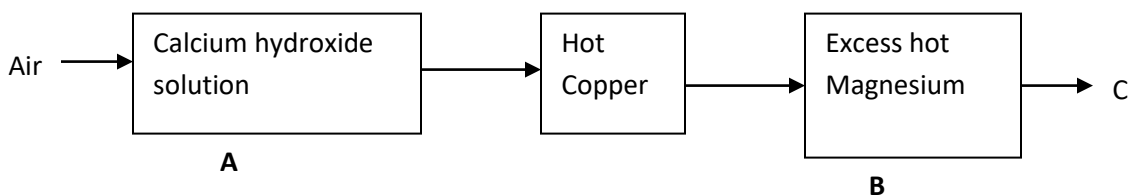
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26. Air was passed through reagents as shown below.



- i) State and explain the observations made when air is passed over hot copper. (2 marks)

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- ii) Write the equation for the reaction taking place in chamber **B** (1 mark)

.....
.....
27. When sugar crystals were reacted with concentrated sulphuric (VI) acid, a black solid **A** was formed which when dried, burnt in excess air to form a colourless gas **B** only while when concentrated sulphuric (VI) acid is reacted with liquid **C** at a temperature of 170°C, a colourless gas **D** is formed which turns yellow bromine water to colourless and also turns colour of substance **E** from purple to colourless.

(i) Identify substances : (2 marks)

Gas **B**

Liquid **C**

Gas **D**

(ii) Which property of concentrated sulphuric (VI) acid is being demonstrated by formation of the black solid (1 mark)

.....
28. Sodium is extracted from its ore by the electrolysis process.

a) Name the chief ore from which sodium is extracted from. (1 mark)

.....
b) An ore is suspected to contain mainly sodium. Describe a method that can be used to confirm the presence of sodium in the ore. (2 marks)

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MOCK 1

NAME..... INDEX NUMBER.....

SCHOOL CANDIDATE SIGN

DATE

233/1

CHEMISTRY

PAPER 1

TIME: 2 HOURS

KCSE MOCK 1

INSTRUCTIONS TO CANDIDATES

- a) Write your name and index number in the spaces provided above
- b) Sign and write the date of examination in the spaces provided
- c) Answer all questions in the spaces provided
- d) KNEC mathematical tables and silent electronic calculators may be used
- e) All workings must be clearly shown where necessary
- f) Candidates should answer all questions in ENGLISH

FOR EXAMINER'S USE ONLY

QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
1 - 32	80	

- 1 a) What is meant by allotropy? (1mk)
- b) Identify the two crystalline allotropes of carbon. (1mk)
- c) Give one use of carbon black. (1mk)

2. When hydrated sample of iron (II) Sulphate $\text{FeSO}_4 \cdot n\text{H}_2\text{O}$ was heated until there was no further change in mass, the following data was recorded.

Mass of evaporating dish = 78.94g

Mass of evaporating dish + hydrated salt = 84.14g

Mass of evaporating dish + residue = 81.78g

Determine the empirical formula of the hydrated salt

(Relative formula Mass of $\text{FeSO}_4 = 152$, $\text{H}_2\text{O} = 18$) (3mks)

3. Equal volumes of 2M monobasic acids R and S were each reacted with excess magnesium ribbon. The table below shows the volume of the gas produced after one minutes

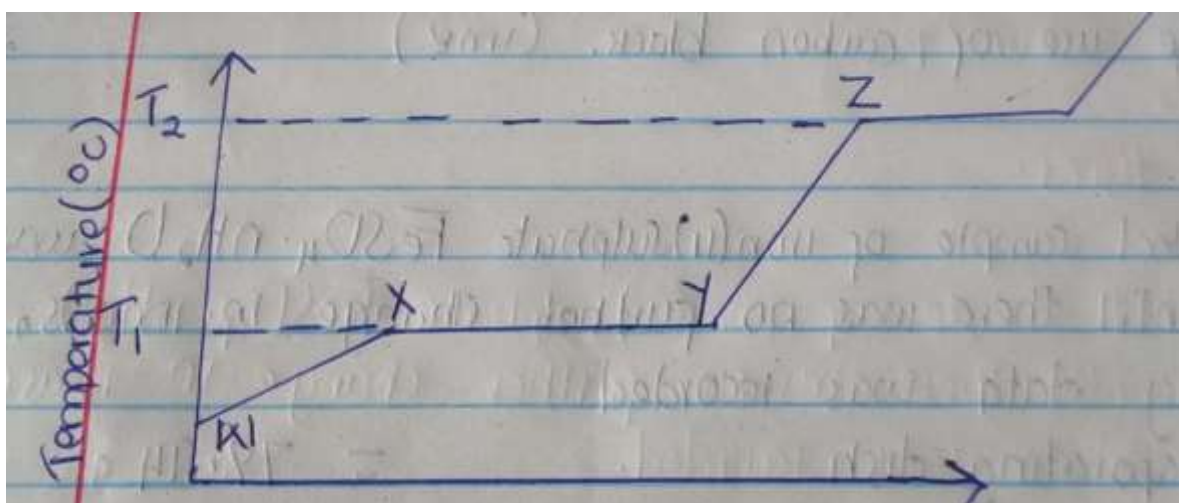
Acid	Volume of gas (cm^3)
R	80

S	30

a) Write the ionic equation for reaction which took place (1mk)

b) Explain the difference in the volumes of the gas produced (2mks)

4. The graph below shows the changes which takes place when a solid is heated.



a) What happened to the molecules between W and X? (1mk)

b) What is the significance of temperatures T_1 and T_2 (1mk)

c) Explain why the temperature does not rise between X and Y (1mk)

5. In an experiment to determine the solubility of potassium nitrate at 30°C , a saturated solution was heated in an evaporating dish until there was no further change in mass. The following

data was obtained.

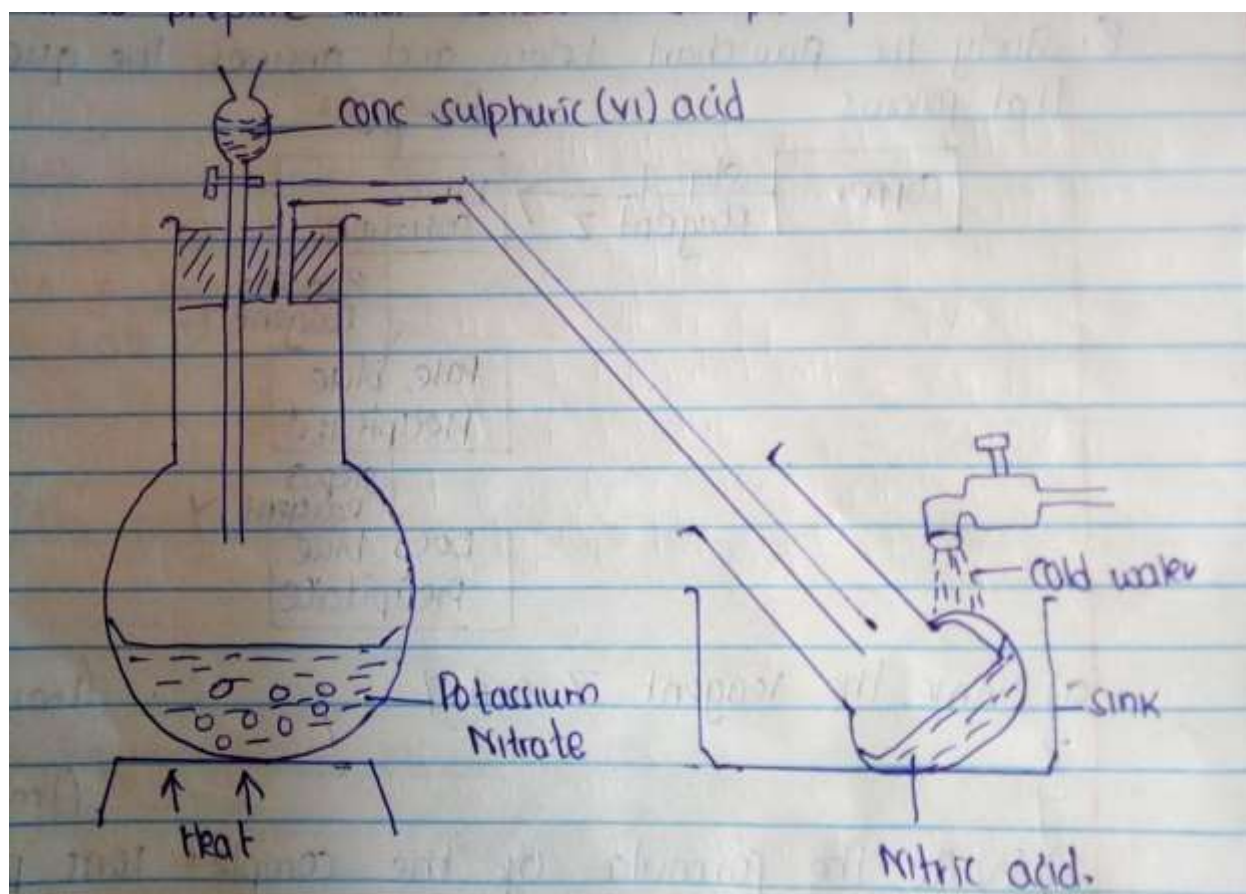
Mass of dish + solution = 128.9 g

Mass of dish + dry salt = 103.9 g

Mass of empty dish = 94.3 g

Determine the solubility of potassium nitrate at 30°C . (3mks)

6. The diagram below shows a set up that was used to prepare and collect a sample of nitric acid.

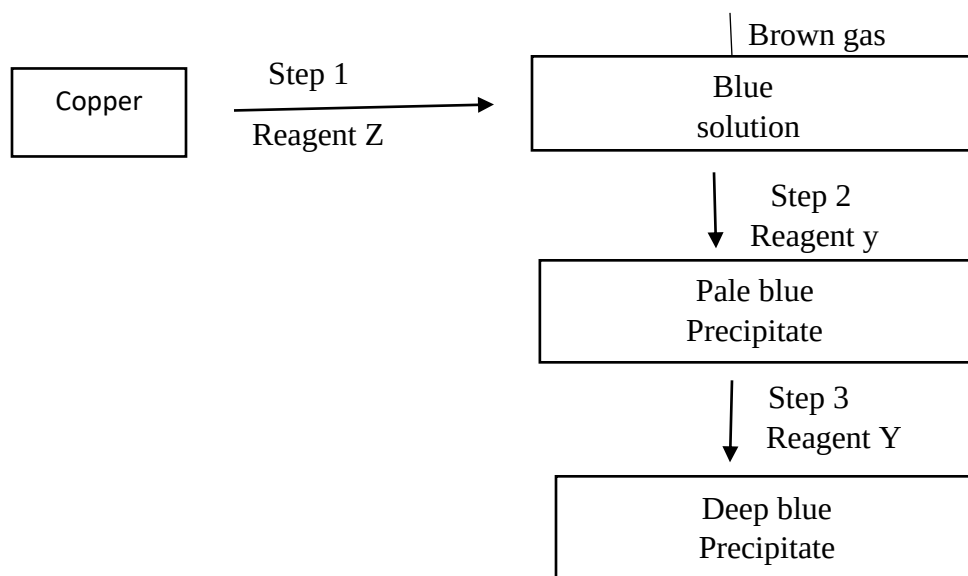


a) Give a reason why it is possible to separate nitric acid from Sulphuric acid in the set up. (1mk)

b) Name another substance that can be used instead of potassium nitrate. (1mk)

7. Starting with lead oxide, nitric acid, sodium sulphate, water and all necessary apparatus, describe how you would prepare a dry sample of lead (II) sulphate (3mks)

8. Study the flow chart below and answer the questions that follows:



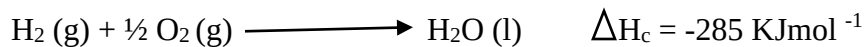
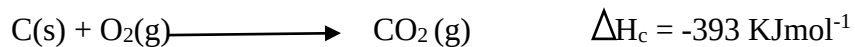
a) Name the reagent Z and Y

Z (1mk)

Y (1mk)

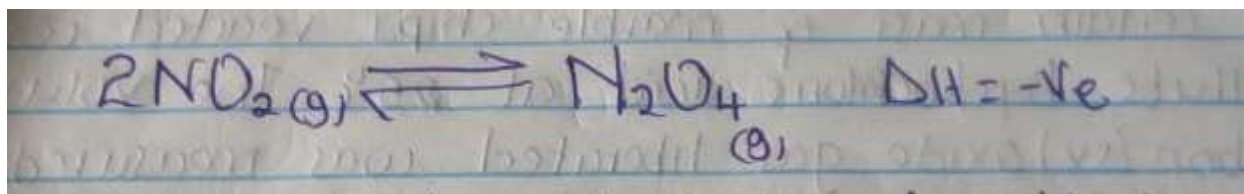
b) Write the formula of the complex ions presented in the deep blue solution (1mk)

9. The equations below shows the molar enthalpies of combustion of carbon, hydrogen and methane.



Use the energy cycle diagram to calculate the heat of formation of methane (3mks)

10. NO_2 and N_2O_4 gases exist in equilibrium at 20°C

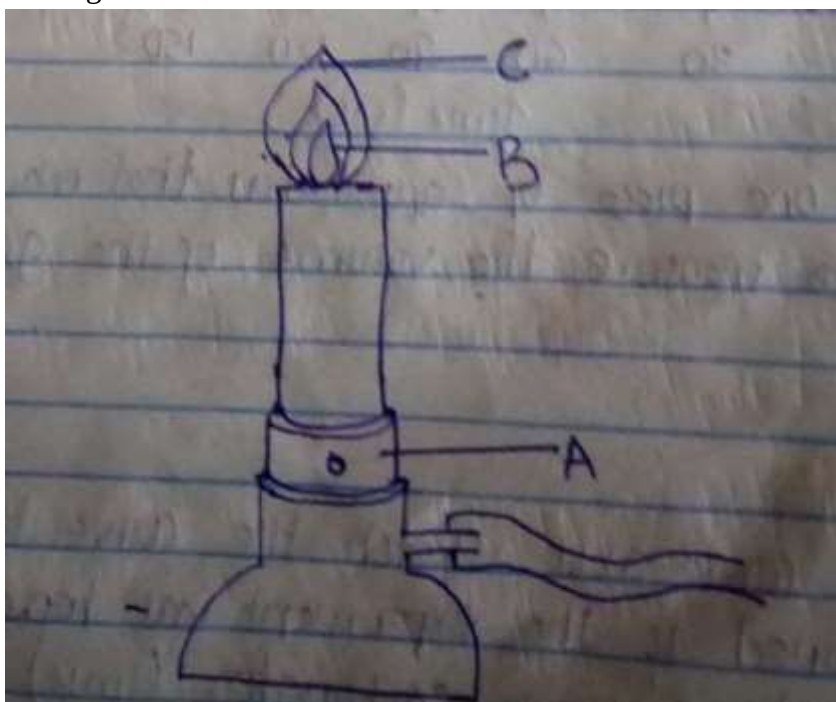


State and explain the observation that would be made when

a) A syringe containing the mixture 20°C is heated to 40°C (1mk)

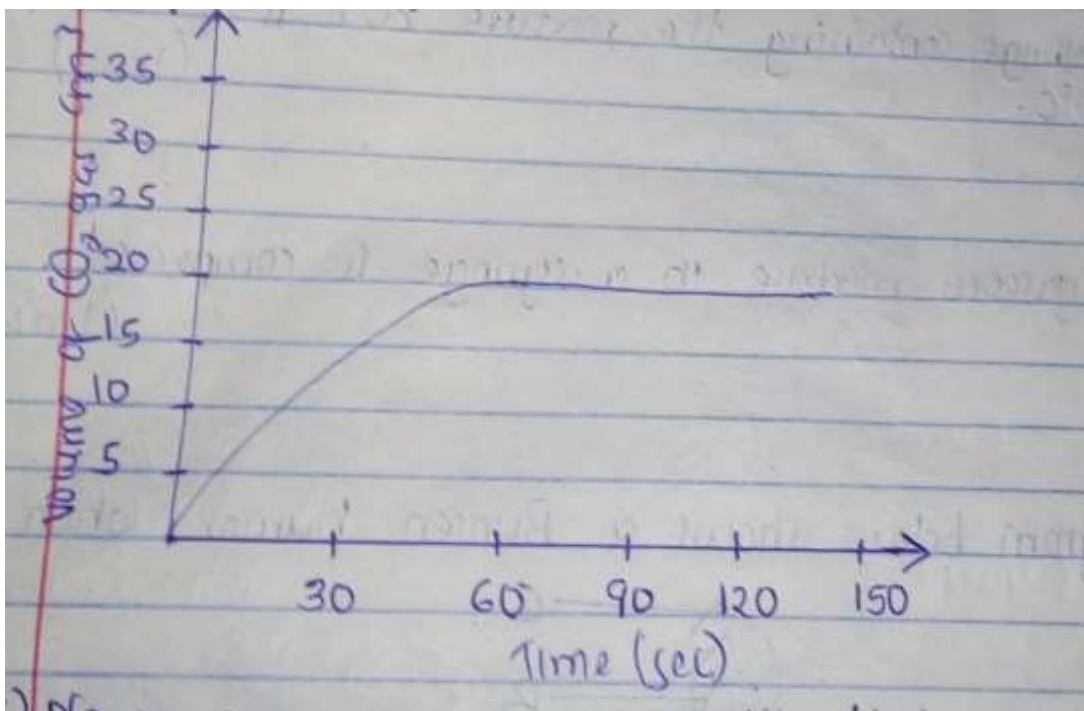
b) The gaseous mixture in a syringe is compressed. (1mk)

11. The diagram below shows a Bunsen burner when in use



- a) Name the regions labelled B and C (1mk)
- B
- C
- b) What is the function of the part labelled A? (1mk)

12. A certain mass of marble chips reacted with excess dilute hydrochloric acid at 25°C . The volume of carbon (iv) oxide gas liberated was measured after 30 seconds. The results were presented as shown in the graph below.



- a) Name one piece of apparatus that may have been used to measure the volume of the gas liberated. (1mk)
- b) On the same axis sketch the curve that would be obtained if the experiment was repeated using powdered calcium carbonate. (1mk)

13. When hydrogen Sulphide gas was bubbled into an aqueous solution of iron (iii) chloride, a yellow precipitate was deposited.

- a) State another observation that would be made (1mk)
- b) Write an equation of the reaction that took place. (1mk)

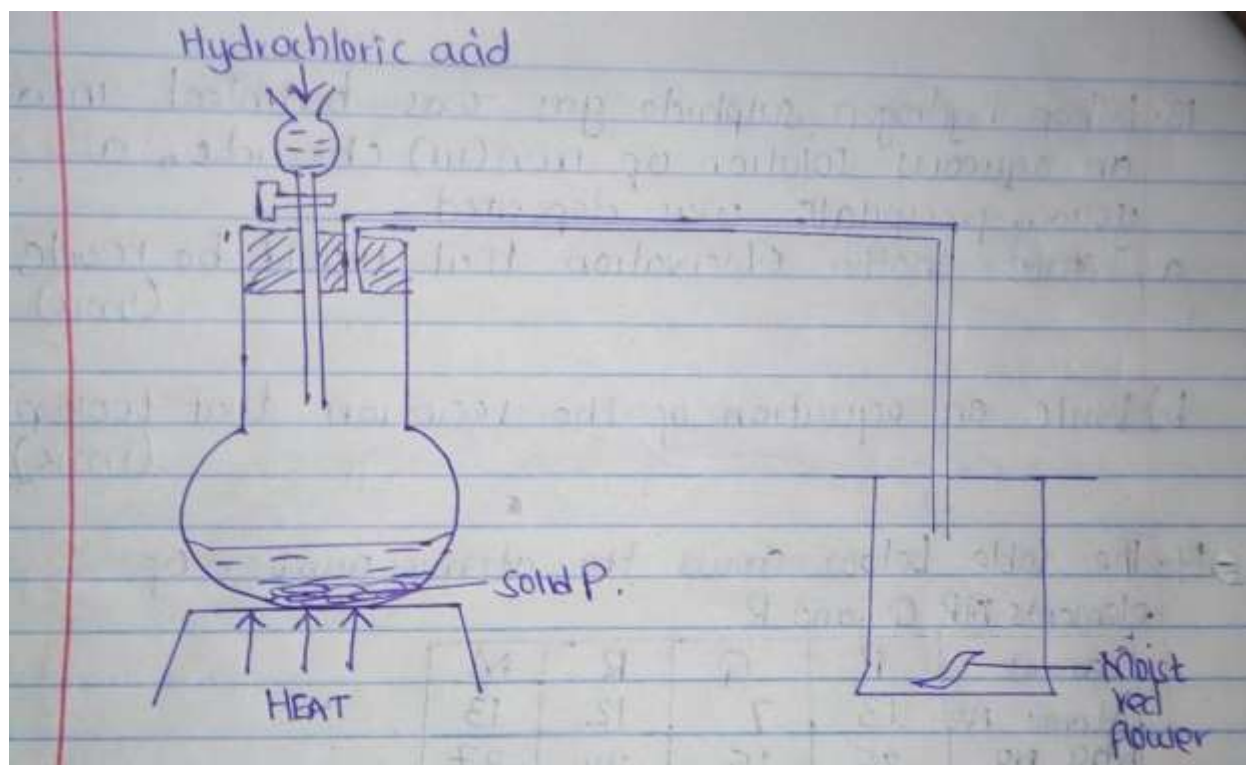
14. The table below shows the atomic number of elements M, P, Q and R.

Element	P	Q	R	M
Atomic No	13	7	12	13
Mass No	26	15	24	27

a) Which two letters represent the same element? Give reasons (1mk)

b) Give the number of neutrons of an atom of element Q (1mk)

15. The diagram below show the set up that was used to prepare and collect Sulphur (iv) oxide gas.



a) Identify the solid P (1mk)

b) i) Why is it possible to collect Sulphur (iv) oxide as shown? (1mk)

ii) What happened to the red flower? (1mk)

16 a) State Charles' law (1mk)

b) The volume of a sample of nitrogen gas at temperature of 298K and 600mmHg pressure was 0.048m^3 , calculate the temperature at which the volume of the gas would be 0.032m^3 if pressure remains the same. (2mks)

17. Element T consists of two isotopes ^{62}T and ^{64}T in the ratio 7:3 respectively. Calculate the Relative atomic mass of element T (3mks)

18. Name the process which takes place when

a) Solid carbon (iv) oxide changes directly into gas (1mk)

b) Butanol reacts with hexanoic acid in the presence of Sulphuric (iv) acid. (1mk)

19. Study the standard electrode potentials for the half-cells give below and answer the questions that follows (the letters do not represent the actual symbols of the elements)

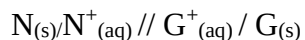
	$E^\ominus$ volts
$N^+(aq) + e^- \longrightarrow N(s)$	-2.92
$J^+(aq) + e^- \longrightarrow J(s)$	+0.52
$K^+(aq) + e^- \longrightarrow K(s)$	0.00
$G^+(aq) + e^- \longrightarrow G(s)$	+1.36
$M^{2+}(aq) + 2e^- \longrightarrow M(s)$	-0.44

a) Identify

i) The strongest reducing agent (½ mks)

ii) The strongest oxidizing agent (½mks)

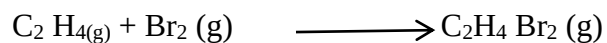
b) Calculate the e.m.f of the cell (2mks)



20. Study the table below and answer the questions that follow

Bond type	Bond energy KJ/mol
C - C	346
C = C	610
C - H	413
C - Br	280
Br - Br	193

a) Calculate the enthalpy of the following reaction. (2mks)



b) Name the type of reaction that took place in a) above (1mk)

21. Briefly explain how you would obtain pure sample of lead (ii) chloride from a mixture of lead (ii) chloride and silver chloride (3mks)

22. Explain the following observations: very little carbon (iv) oxide is evolved when lead carbonate reacts with dilute hydrochloric acid (2mks)

23. The table below gives some properties of compounds P, Q, R and S

Compound	B.P ⁰ C	M.P ⁰ C	Conductivity in water
P	77	-23	Does not conduct
Q	74	-19	Does not conduct
R	-161	-85	Conduct
S	2407	714	Conduct

a) Which one of the compounds in the table is ionic?

Explain

(1mk)

b) Give the compound that is liquid at room temperature. (1mk)

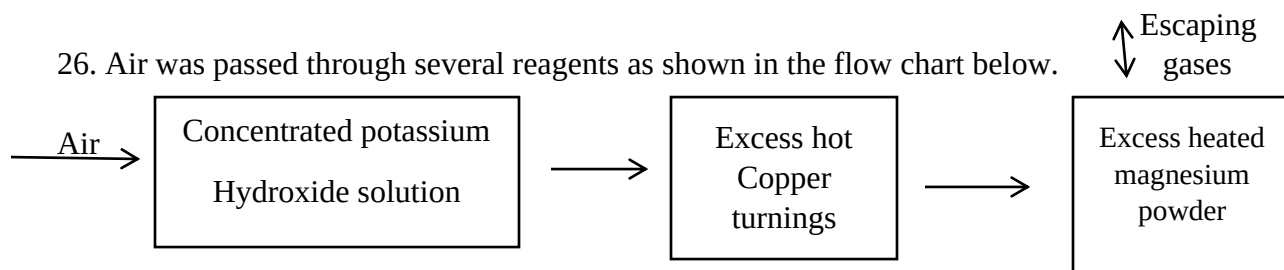
24. When butan – 1 – ol is oxidized by acidic potassium dichromate, a weak organic acid is formed. Draw and name the structure formula of the acid obtained from the above reaction. (2mks)

25. When a hydrocarbon fuel burns, one of the main products is acidic gas R

i) Identify gas R

(1mk)

ii) What two effects does gas R have when its concentration in the atmosphere exceeds its acceptable level. (2mks)



a) Write an equation for the reaction that took place in the chamber with the magnesium powder (1mk)

b) Name one gas that escapes from the chamber containing magnesium powder. Give a reason for your answer. (1mk)

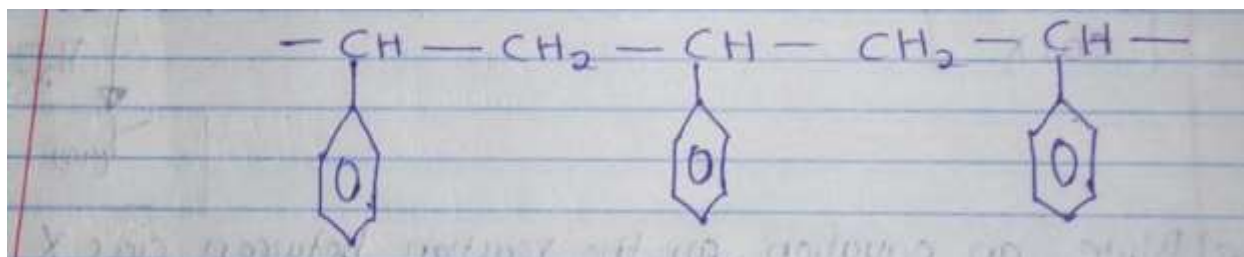
27. When a current of 6.42 Amperes was passed through an electrolyte Y^{2+} for 10 minutes, 2.74g of Y were deposited. (1mk)

i) Calculate the quantity of the electricity passed in the experiment.

- ii) Determine the relative atomic mass of (1 faraday = 96,500 coulombs) (2mks)

28. Explain why aluminium metal is not extracted from aluminium chloride (2mks)

29. Part of the structure of a polymer is given below.



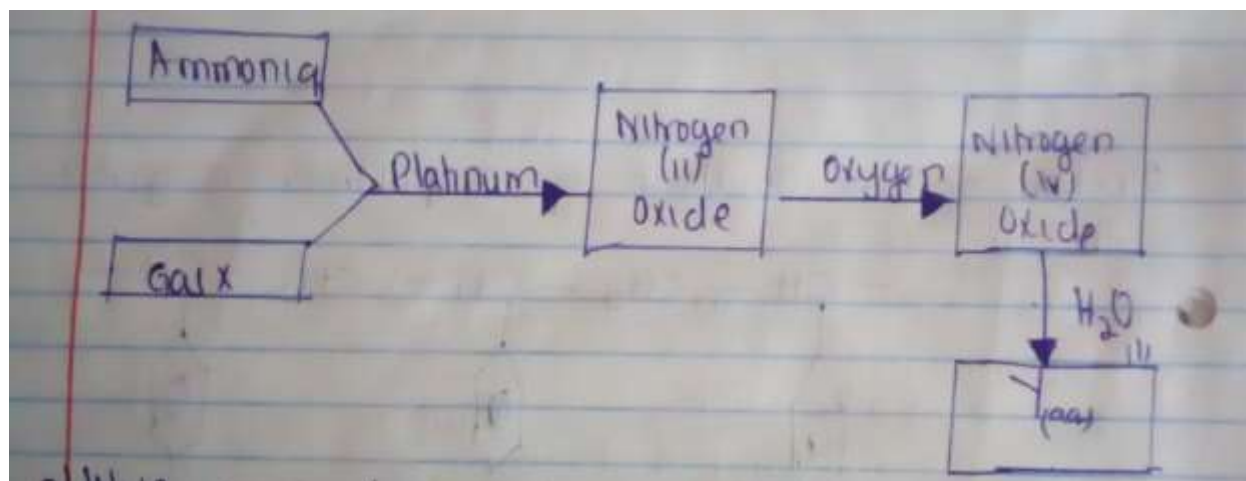
- i) Identify the polymer. (1mk)
- ii) State one disadvantage of continued use of this polymer (1mk)

30. The table below gives the rate of decay for a radioactive element M

Number of days	Mass (g)
0	12.8
280	0.8

Determine the half – life of the radioactive element M (2mks)

31. Study the flow chart below and answer the questions that follows.



a) Write an equation for the reaction between gas X and ammonia (1mk)

b) Write the formulae of the substance present in the mixture Y(aq) (2mks)

32. When the air hole is fully opened, the Bunsen burner produces a non-luminous flame
Explain (1mk)

POST MOCK 1

Name Index No...../.....
School..... Candidate's sign.....
Date.....

233/1

CHEMISTRY THEORY

PAPER 1

2 Hours

KCSE POST MOCK 1

Kenya Certificate of Secondary Education (K.C.S.E)

INSTRUCTIONS TO CANDIDATES

1. Answer ALL questions in the spaces provided
2. Mathematical tables and electronic calculators may be used.
3. All working MUST be shown clearly where necessary.

FOR EXAMINERS USE ONLY

Maximum score	Candidate's score
80	

This paper consists of 13 printed pages. Candidates should check the questions to ensure that all pages are printed as indicated and no question(s) are missing

1. Study the information given below and use it to answer the questions that follow;

Red dye is more soluble than green dye, green is more soluble than yellow whereas blue dye is the least soluble.

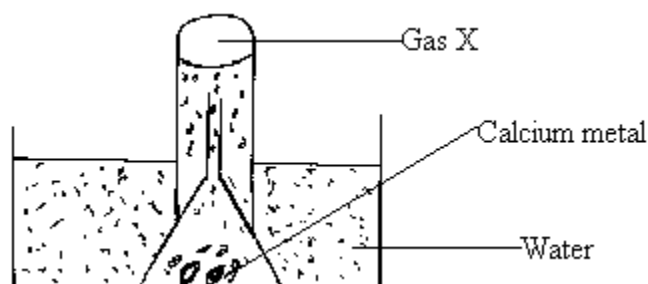
i) Represent the three dyes on a round paper chromatography. **(2marks)**

ii) Name one industrial application of chromatography. **(1mark)**

2. a) What is a fuel? **(1mark)**

b) Calculate the heat value of ethanol if its molar enthalpy of combustion is $-1360 \text{ kJ mol}^{-1}$
(C=12.0, O=16.0, H=1.0) **(2marks)**

3. Study the set up below and use it to answer the questions that follow.



- a) What physical property of calcium metal is demonstrated in the diagram above? **(1mark)**

.....

- b) What would be observed if water was replaced with dilute Sulphuric (VI) acid? **(2marks)**

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4. A hydrocarbon decolorizes chlorine gas in presence of ultra violet light but does not decolorize acidified potassium manganate (VII) solution.

- i) Name the homologous series to which the hydrocarbon belongs. **(1mark)**

.....

- ii) Draw the structural formula and name the fourth member of the homologous series to which the hydrocarbon belongs? **(2marks)**

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5. Explain why a solution of hydrogen chloride in water turns blue litmus paper red but a solution of hydrogen chloride in methylbenzene has no effect on litmus papers. **(2marks)**

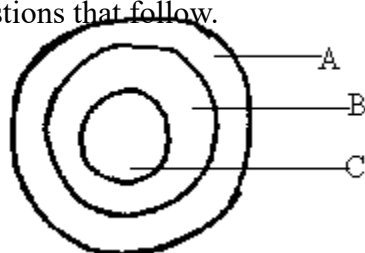
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6. The diagram below represents a cross section of the apparatus used to extract sulphur from its deposits. Study it and answer the questions that follow.



- a) State the role of the substance that is passed through;

i) A **(1mark)**

ii) C..... **(1mark)**

- b) Give one reason why the method shown in the diagram is suitable for extraction of sulphur. **(1mark)**

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7. Explain how you would obtain magnesium carbonate from a mixture of magnesium carbonate and sodium carbonate. **(2mark)**

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8. 20g of potassium carbonate were dissolved in 50cm^3 of water in a conical flask. Lemon juice was then added drop wise while shaking until there was no further observable change.
- a) Explain the observation that was made in the conical flask when the reaction was in progress. **(1mark)**

- b) What observation would be made if lemon juice had been added to copper turnings in a conical flask? Give a reason. **(2marks)**

9. Explain why a burning magnesium continues to burn in a gas jar full of carbon (IV) oxide while a burning candle would be extinguished. **(2marks)**

10. 8.4g of carbon (IV) oxide and 3.42g of water are formed when a hydrocarbon is burnt completely in oxygen.

Determine the empirical formula of the hydrocarbon.

(H=1.0; C=12.0; O=16.0) **(3marks)**

11. The melting point of nitrogen is -196°C while that of sodium is 98°C , in terms of structure and bonding explain the differences in the melting points of nitrogen and sodium. **(2marks)**

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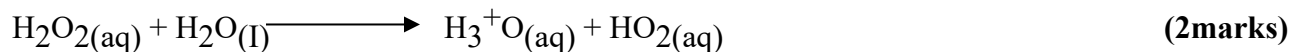
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12. a) What is an amphoteric substance? **(1mark)**

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- b) Identify the reagent that acts as a base in the equation below. Give a reason for your answer.



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13. In the industrial manufacture of ammonia gas by Harber process, Nitrogen and hydrogen gases are reacted together.

- a) State any two conditions necessary for ammonia to be formed in the Harber process. **(1mark)**

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- b) Nitrogen and hydrogen must be purified before they are reacted. Give a reason. **(1mark)**

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c) Other than manufacture of fertilizers state one use of ammonia.

(1mark)

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14. Describe how you would prepare crystals of potassium sulphate starting with 100cm^3 of 0.5M potassium hydroxide. **(3marks)**

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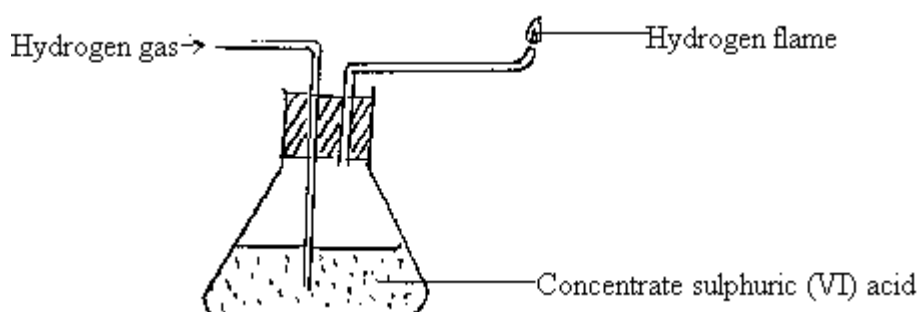
15. Distinguish between atomic mass and relative atomic mass.

(2marks)

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16. Study the diagram below and answer the questions that follow:



a) Name one chemical and one physical property of hydrogen being demonstrated in the set-up above.

i) Chemical property.

(1mark)

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ii) Write a chemical equation for the reaction taking place.

(1mark)

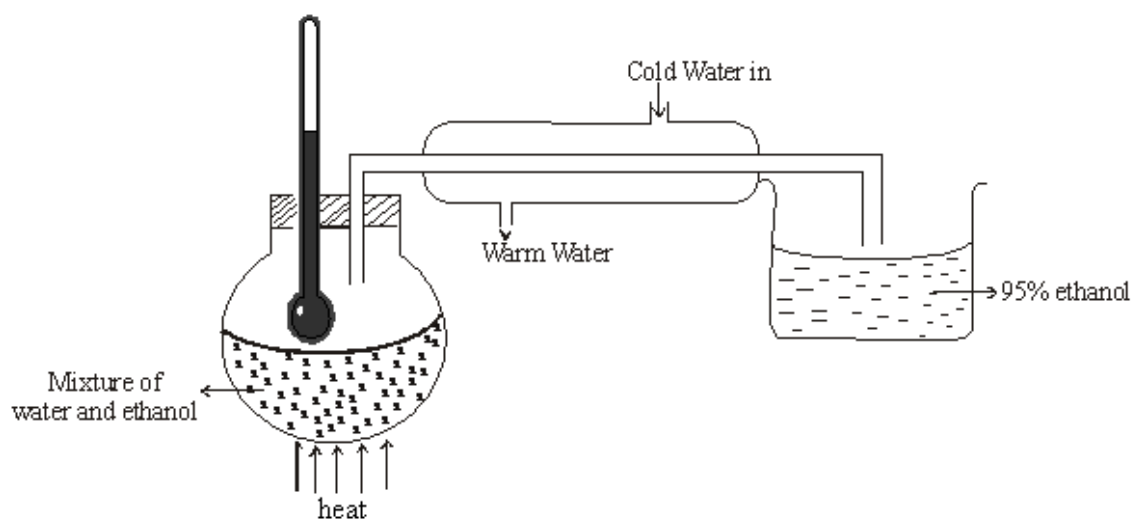
b) Name any other substance that can be used in place of concentrated sulphuric (VI) acid. **(1mark)**

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c) Give a reason why it is necessary to burn the hydrogen gas as shown in the set-up. **(1mark)**

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17. The diagram below shows a simple distillation to separate water and ethanol.



a) State one of the conditions for the above process to take place. **(1mark).**

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b) Ethanol collected is 95% pure. Secondary distillation is carried out in which calcium metal is placed in ethanol to react with water. Give a reason why the following cannot be used. **(2marks)**

i. Sodium

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ii. Copper.....

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18. A solution of potassium chloride was added to a solution containing a lot of lead (II) nitrate. A precipitate that weighed 5.56g was formed. Find the amount of potassium chloride in the solution **(3marks)**

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19. 1.9g of Magnesium chloride was dissolved in water. Silver nitrate solution was added till excess. Calculate the mass of silver nitrate that was added for complete reaction. **(3marks)**

(MgCl₂= 95, N=14, O=16, Ag = 108)

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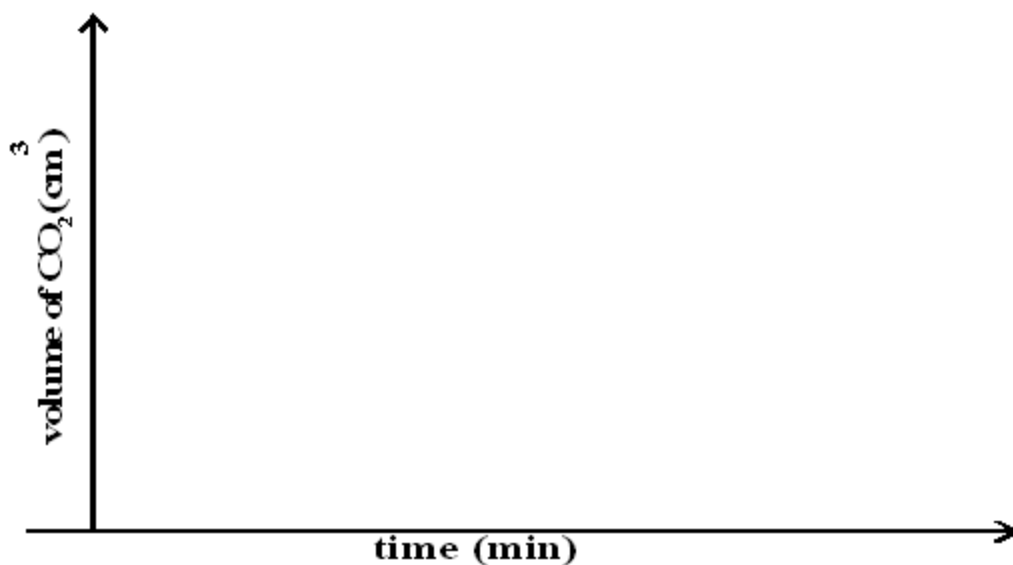
20. In an experiment 40cm³ of 0.5M nitric acid was reacted with excess Sodium Carbonate and the volume of Carbon (IV) Oxide produced recorded with time. In another experiment, the same volume and concentration of ethanoic acid was reacted with excess Sodium Carbonate and the volume of Carbon (IV) Oxide produced recorded with time.

a) Why was Sodium Carbonate used in excess?

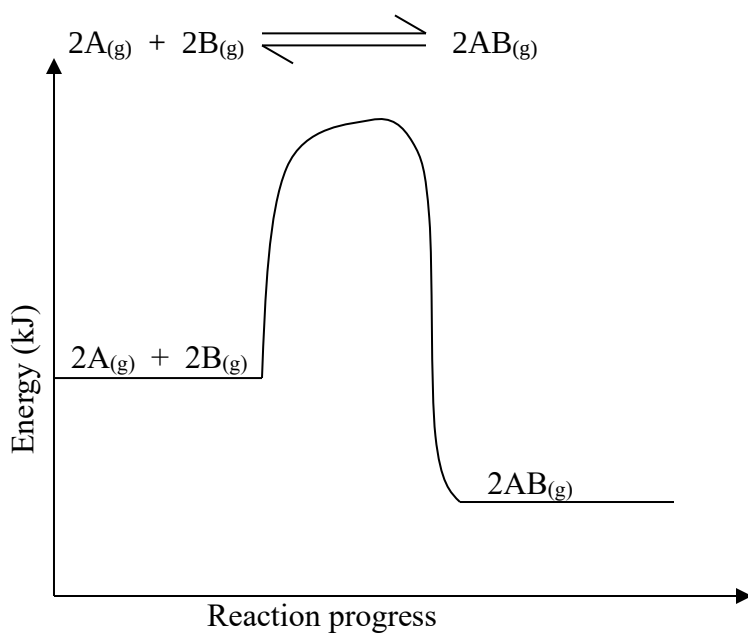
(1marks)

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b) On the graph below sketch and label the curves of the volumes of Carbon (IV) Oxide produced against time. **(2marks)**



21. The figure below is an energy level diagram for the reaction.



Explain how the following conditions would affect the yield of AB.

(i) Increase in pressure.

(2marks)

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(ii) Decrease in temperature.

(2marks)

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22. A white solid K was heated. It produced a brown gas **A** and another gas **B** which relights a glowing splint. The residue left was yellow even after cooling.

a) Identify gases **A** and **B**.

(2marks)

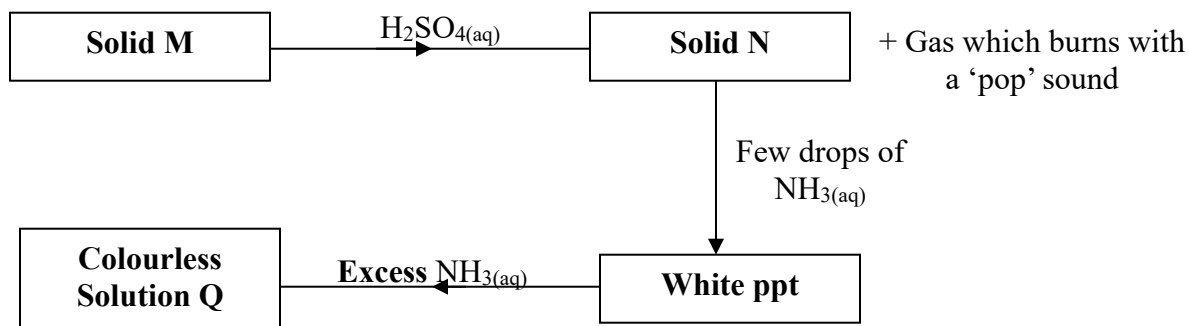
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b) Write a balanced chemical equation for the decomposition of solid K.

(1mark)

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23. The scheme below shows some reaction sequence starting with solid M.



a) Name solid **M**.

(1mark)

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b) Write the formula of a complex ion present in solution Q. (1mark)

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Write an ionic equation of the reaction between barium nitrate and solution N. (1mark)

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24. (a) What is meant by a saturated solution? (1mark)

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(b) In an experiment to determine the solubility of solid Y in water at 30°C the following results were obtained.

Mass of evaporating dish	=	26.2g
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Mass of evaporating + saturated solution	=	42.4g
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Mass of evaporating dish + dry solid Y	=	30.4g
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Using the information, determine the solubility of solid Y at 30°C. (2marks)

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25. Compare the electrical conductivity of dilute Sulphuric (VI) acid and concentrated Sulphuric (VI) acid. Explain your answer. (2marks)

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26. Draw a well labelled diagram of a setup used to prepare and collect dry Sulphur IV oxide. (3marks)

27. The molar heat of formation of carbon (II) oxide is -105kJmol^{-1} , molar heat of combustion of carbon is -393kJmol^{-1} .

By using an energy cycle diagram, determine the molar heat of combustion of carbon (II) oxide.

(3marks)

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28. In an experiment, a small amount of charcoal was added into a test tube and 5cm^3 of concentrated nitric (V) acid added, then warmed.

(i) State the observation that was made.

(1mark)

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(ii) Explain the observation made in (i) above.

(1mark)

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(iii) Write an equation for the reaction that took place.

(1mark)

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