NAME.....INDEXNO.....ADM NO.....

SCHOOL.....SIGN.....DATE.....

ACK MASENO WEST JOINT EXAMINATION

KENYA CERTIFICATE OF SECONDARY EDUCATION

101/1
ENGLISH
PAPER 1
(FUNCTIONAL SKILLS)

INSTRUCTIONS TO CANDIDATES.

a) Write your name and admission number in the spaces provided.
b) Answer all the questions in this paper.
c) All your answers must be written in the spaces provided in the question paper.
d) This paper consists of 6 printed pages.
e) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.
f) Candidates must answer the questions in English.

For Examiner's use only.

Question	Maximum Score	Candidate's Score
1	20	
2	10	
3	30	

1. FUNCTIONAL WRITING (20 MARKS)

Imagine that your birthday falls in April this year. You intend to invite eight of your classmates to the party and you have decided to prepare for them your favourite dish. Write the recipe for the dish you would prepare for them.
Remember to include a minimum of six steps in the method of preparation. (20mks)

2. CLOZE TEST (10MKS)

Read the passage below and fill in the blank spaces with the most appropriate wor

Any accomplishment, whether large (a) _____small, is a source ofimprovi (b)_____ self-esteem if it is perceived as (c) _____. For some, it might be success (d) _____ a test or exam.that contributes to self-esteem. For others, the purchase of (e) _____ new home or even a craft or hobby that is well done (f)_____ be the contributing factor. In general self-esteem is nourished by that (g) _____ is considered precious and costs energy to acquire.

Finally, we must say that although basic self-esteem (h) _____ constant, one's self-concept can easily change. For example, a woman who hasan oper and sincere (i) _____ with her husband in which she has heardwords of affirmation and approval will have a much higher self-esteem (j) _____ normal during hours (or days) following the conversation.

Adapted from: Discover your worth – by Dr. Julian Melgosa.

3. ORAL SKILLS (30MKS)

4.

a) **Read the poem below and answer the questions that follow.**

Make me a grave whenever you will
In a lowly plain or a lofty hill,
Make it among earth's humblest graves,
But not in a land where men are slaves.

I could not rest if around my grave,
I heard the steps of trembling slave,
His shadow above my silent tomb
Would make it a fearful gloom,

I could not rest if I heard the tread,
Of a coffle going to the shambles led,
And the motter's shiek of wild despair
Rise like a curse on the trembling air

(By Frances Ellen Wotkins Harper)

i) Describe the rhyme scheme of the above poem. (2mks)

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ii) Apart from rhyme, identify and illustrate two other ways in which the poet has achieved rhythm. (4mks)

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iii) How would you recite the second line of the poem? (2mks)

iv) .....
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b) Study the genre below and answer the questions that follow.

Challenger:	Riddle riddle.
Respondent:	Riddle come.
Challenger:	I have a round hut that has no door.
Respondent:	It is an orange.
Challenger:	That is not the answer, try again.
Respondent:	It is an apple.
Challenger:	That is not the answer either, give me a town.
Respondent:	I give you Siaya town.
Challenger:	I went to Siaya town and they asked me to greet you, the answer is an egg.

1. Identify the genre above. (1mk)

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2. Illustrate the following parts of the riddling process. (6mks)

i) Response(s).....

ii) Challenge.....

iii) Acceptance.....

iv) Answer.....

v) Prize.....

vi) Invitation.....

c) Pick the odd word out from the following list based on the pronunciation of the underlined letters. (4mks)

i) Bread, pleasant, please, weapon.

ii) Pot, front, monk, oven

iii) Smooth, broth, northern, southern.

iv) Lake, take, necklace, race.

d) Underline the syllable that that you would stress in the following words. (4mks)

i) Ex . cir . cise

ii) A . buse

iii) Sea . son

iv) Man . age

e) Underline what circumstances would you be forced to interrupt your classmate during a group discussion? (4mks)

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f) Imagine that you are the head prefect of your school and that there is an incident tha requires the urgent attention of the Deputy Principal who is in his/her office. Descrit in details the polite way you would report the incident right from your entry into the office to the time of your leaving the office. (6mk

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THIS IS THE LAST PRINTED PAGE.

NAME.....INDEXNO.....ADM NO.....

SCHOOL.....SIGN.....DATE.....

ACK MASENO WEST JOINT EXAMINATION

KENYA CERTIFICATE OF SECONDARY EDUCATION

233/3

CHEMISTRY

(PRACTICAL)

PAPER 3

MARCH – APRIL-2025

TIME: $2^1/4$ HOURS

INSTRUCTIONS TO CANDIDATES

1. *Write your name, admission number in the space provided.*
2. *Answer all the questions in the spaces provided*
3. *All working must be clearly shown where necessary.*
4. *You are not allowed to start working with the apparatus for the first 15 minutes. This time is to enable you read the question paper and make sure you have all the requirements.*
5. *Candidates should check the question paper to ascertain that all the 7 pages are printed as indicated and that no questions are missing.*

FOR EXAMINERS USE ONLY

QUESTION	MARKS	CANDIDATES SCORE
1	21	
2	13	
3	6	
TOTAL	**40**	

You are provided with

- 4g of solid **A** , hydrated ethanedioic acid ($H_2C_2O_4 . XH_2O$).
- Solution **B** , 0.2M sodium hydroxide.
- You are required to determine:
  i) Solubility of **A**
  ii) The value of X in the formula $H_2C_2O_4 . XH_2O$

Procedure I

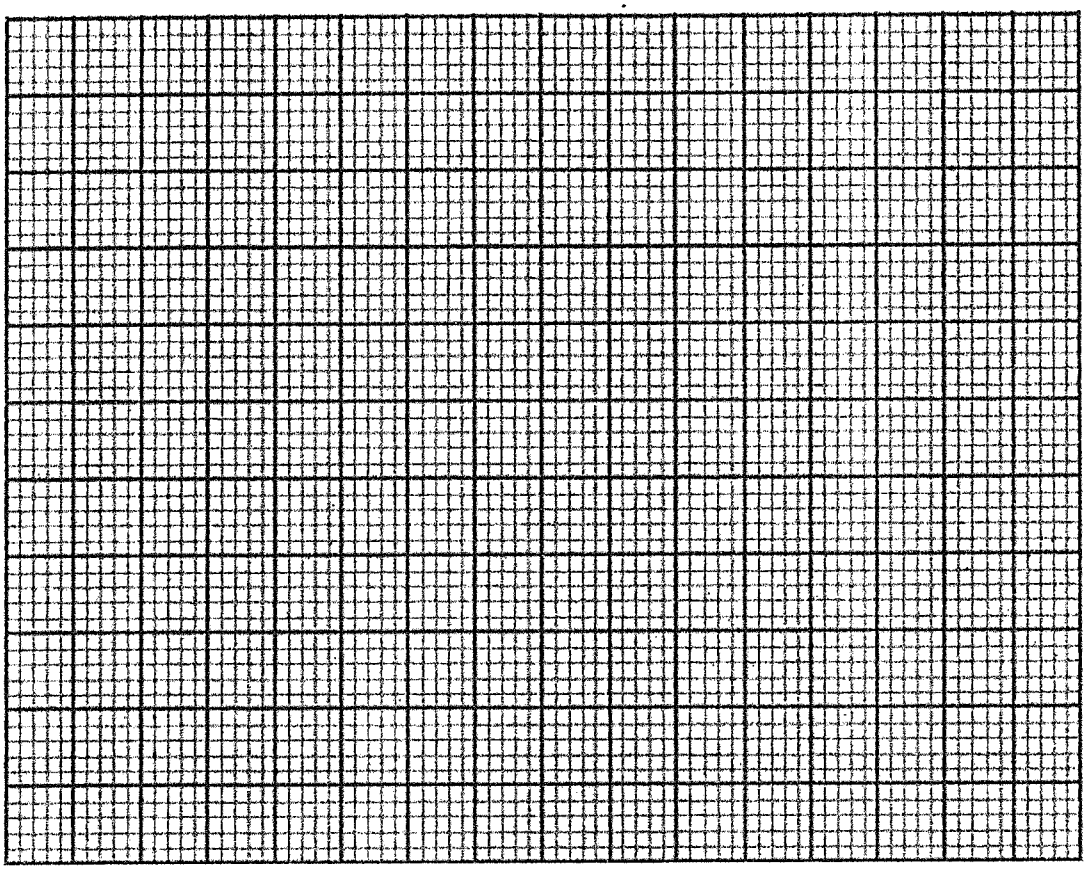
1. Fill the burette with distilled water.
2. Place all the solid **A** into a boiling tube.
3. Transfer $4cm^3$ of distilled water from the burette into the boiling tube containing solid **A**.
4. Heat the mixture while stirring with the thermometer to a temperature of 80^0C
5. Allow the solution to cool while stirring with the thermometer.
6. Record the temperature at which crystal start to form in the table below.
7. Add a further $2cm^3$ of distilled water from the burette to the mixture.
8. Repeat the procedure from step 4 to step 6 above and record the crystallization temperatures.
9. Complete the table 1 below by adding volumes of distilled water as indicated, recording the crystallization temperatures and calculating the solubility of **A** at different temperatures. (Preserve the contents of the boiling tube for procedure II)

Table 1

Volume of distilled water in the boiling tube (cm^3)	Crystallization temperature (^0C)	Solubility of solid **A** in (g/100g of water)
4		
6		
8		
10		
12		

(5mks)

a) On the grid provided, plot the graph of solubility of solid **A** against crystallization temperature. (3mks)



b) From the graph determine:

i) Solubility of **A** at 55^0C (1mk)

ii) The temperature at which 80g of **A** dissolves in 100g of water (1mk)

iii) How does solubility of **A** vary with temperature? (1mk)

Procedure II

1.Transfer the contents of the boiling tube into a clean 250ml volumetric flask . Add distilled water to the mark. Label this resulting solution **A**.

2. Fill a burette with solution **A** .

3. Pipette $25cm^3$ of solution **B** into a clean 250ml conical flask .
Add 3 drops of phenolphthalein indicator .

4.Titrate solution **A** against **B** to an accurate end point. Record your results in the **table II** below.

5. Repeat the experiment two more times and complete the **table II** below.

Table II	I	II	III
Final burette reading(cm^3)			
Initial burette reading(cm^3)			
Volume of solution **A** used (cm^3)			

(4mks)

i) Calculate the average volume of solution **A** used (1mk)

ii) Calculate the number of moles of solution **B** used (1mk)

iii) Calculate the number of moles of solution **A** used (the dibasic acid) (1mk)

iv) Calculate the concentration of solution **A** in moles per litre (1mk)

v) Determine the value of X in the formula $H_2C_2O_4 . XH_2O$ (2mks)

2. You are provided with solid L which is a mixture. Carry out the tests below. Record your observations and inferences in the table below.

i. Place all the solid in a boiling tube and add $10cm^3$ of distilled water.

ii. Shake and then filter the mixture.

iii. Keep both the filtrate and residue.

a) Divide the filtrate into 4 portions.

i. To the first portion, add a sodium hydroxide solution drop wise until in excess.

Observation	Inferences
(1mk)	(1mk)

ii. Into the second portion, dip a clean metallic spatula into the filtrate and ignite over a non – luminous flame.

Observation	Inferences
($^1/_2$mk)	($^1/_2$mk)

iii. To the third portion, add 3 drops of Lead (II) nitrate solution and warm.

Observation	Inferences
(1mk)	(1mk)

iv. To the fourth potion add 2 – 3 drops to acidified potassium dichromate (VI)

Observation	Inferences
(1mk)	(1mk)

b) i) Transfer the entire residue into a test tube and add nitric (V) acid drop wise and shake until all the solid dissolves . Divide the solution into 3 portions.

Observation	Inferences
(1mk)	(1mk)

ii). To the first portion, add sodium hydroxide solution drop wise until in excess.

Observation	Inferences
(1mk)	(1mk)

iii) To the second portion, add aqueous ammonia solution drop wise until in excess.

Observation	Inferences
(1mk)	(1mk)

3. You are provides with an organic compound **F**. Carry out the test below and record your observations and inferences in the spaces provided.

a). Transfer all solid **F** into a clean boiling tube and add about $10cm^3$ of distilled water and shake thoroughly.

Observation	Inferences
(1mk)	($^1/_2$ mk)

b) To about $2cm^3$ of solution F in a test tube, add 3 drops of acidified potassium manganate (VII) solution and shake thoroughly.

Observation	Inferences
(1mk)	(1mk)

c) To about $2cm^3$ of solution F dip a piece of universal indicator paper provided.

Observation	Inferences
($^1/_2$ mk)	($^1/_2$ mk)

d) To about $2cm^3$ of solution F, add small amount of solid sodium hydrogen carbonate.

Observation	Inferences
(1mk)	($^1/_2$mk)

NAME.....INDEXNO.....ADM NO.....

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ACK MASENO WEST JOINT EXAMINATION

KENYA CERTIFICATE OF SECONDARY EDUCATION

CHEMISTRY PAPER 2

(THEORY)

233/2

TIME: 2HRS

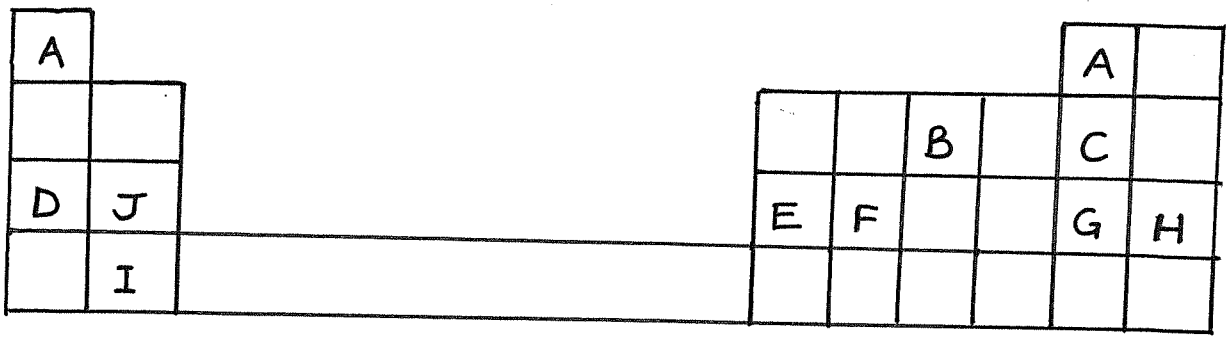
INSTRUCTIONS TO CANDIDATES

a.) Write your name and index number in the spaces provided
b.) Sign and write the date of the examination in the spaces provided
c.) All working must be clearly shown where necessary
d.) Attempt all the questions in the spaces provided
e.) Mathematical tables and electronic calculators may be used
f.) Answer the questions in English

Question	Max. score	Candidate's score
1	12	
2	9	
3	12	
4	12	
5	12	
6	11	
7	12	
TOTAL	80	

1.

a.) The grid below shows part of the periodic table. Study it and answer the questions that follow. (The letters do not represent the actual symbols of the elements)



i.) Explain why element A can be placed in the two positions as shown above (2mks)

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ii.) Identify an element that forms a divalent cation with an electron configuration of 2.8 .....(1mk)

iii.) The oxide of element E reacts with both dilute hydrochloric acid and potassium hydroxide solution to form a salt.

I. Name the property of this oxide .....(1mk)

II. Give the name of another element, other than E, whose hydroxide has the same property .....(1mk)

iv.) With a reason compare the atomic radius of element E with that of element G (2mks)

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b.) $60cm^3$ of gas B diffused through a porous pot in 50 seconds. How long would it take $60cm^3$ of Sulphur (IV) oxide to diffuse through the same pot under the same conditions? (B=14, S=32, O=16) (2mks)

c.) Use the information in the table below to answer the questions that follow:

Element	Atomic number	Melting point (°C)
Helium	2	-270.0
Neon	10	-249.0
Argon	18	-189.0
Krypton	36	-157.0
xenon	54	-112.0

(i.) Explain the trend in the melting point of the elements (2mks)

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(ii.) State one use of argon (1mk)

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2.

(a.)

(i.) Define a strong acid (1mk)

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(ii.) In an experiment to investigate a property of two acids, M and N, equal volumes of the two acids of the same concentration were each reacted with equal volumes of 2M potassium hydroxide. The results were recorded as shown in the table below:

Acid	Rise in temperature, ΔT (^oC)
M	4
N	2

Which of the following acids is likely to be a weak acid? Explain

.....(2mks)

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(iii.) On complete dissolution, 2g of ammonium nitrate caused the temperature of 100ml of water in a beaker to drop from 30°C to 28^0C. Determine the molar heat of solution of ammonium nitrate. (density of solution= 1g/cm^3, specific heat capacity of solution = 4,200J/kg.K, N=14, O=16, H=1)

(b.) The thermochemical equations for the formation of hydrogen peroxide under standard conditions are;

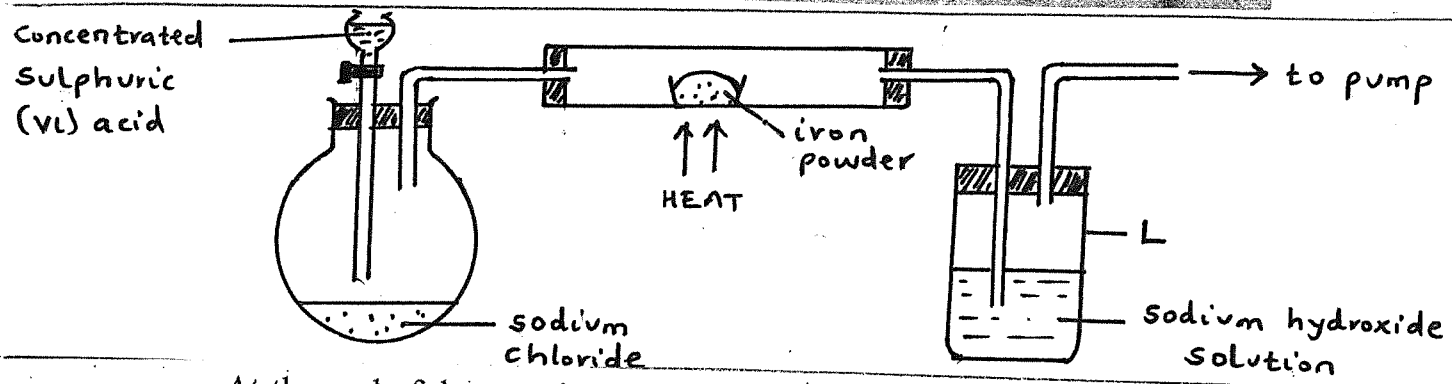
$H_{2(g)} + O_{2(g)} \longrightarrow H_2O_{2(g)}$; $\Delta H_f^{\emptyset} = -133kJ/mol$

$H_{2(g)} + O_{2(g)} \longrightarrow H_2O_{2(l)}$; $\Delta H_f^{\emptyset} = -188kJ/mol$

Determine the molar heat of vaporization of hydrogen peroxide (3mks)

3.

(a.) The setup below was used to prepare hydrogen chloride gas and react it with iron powder. Study it and answer the questions that follows:



At the end of the reaction, the iron powder turned into a light green solid.

i.) Identify the light green solid .....(1mk

ii.) At the beginning of the experiment, the pH of the solution in container L was about 14.0. at the end the pH was found to be 2.0. explain (2mks

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iii.) State the property of concentrated sulphuric (VI) acid that makes the reaction possible (1mk)

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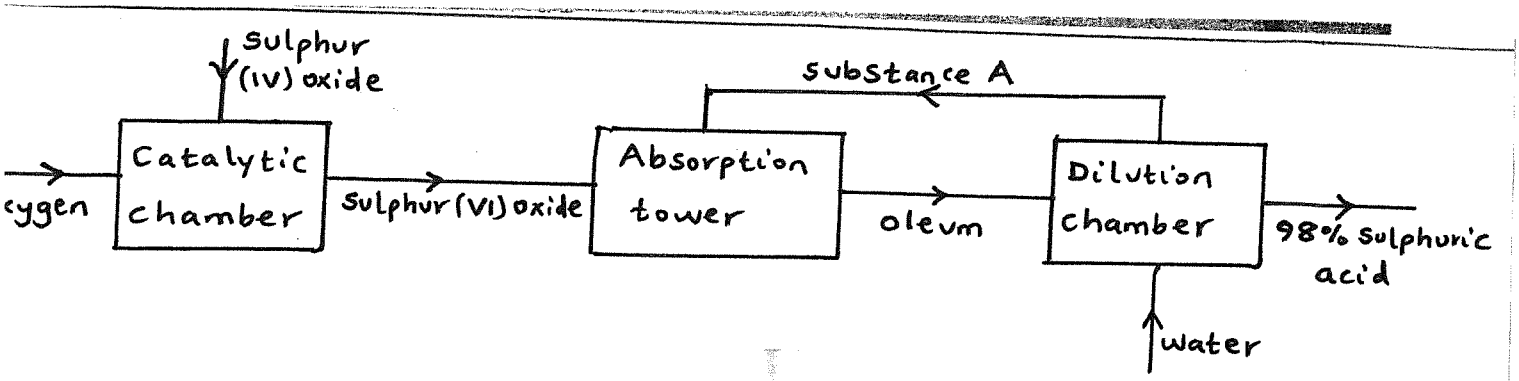
(b.) The flowchart below shows some of the processes involved in large scale production of sulphuric (VI) acid. Use it to answer the questions that follows:



(i.) Describe how oxygen is obtained from air on a large scale (3mks)

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(ii.)

I. Identify substance A .....(1mk)

II. Write an equation for the reaction that takes place in the absorption tower (1mk)

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(iii.) Vanadium (V) oxide is the commonly used catalyst in the contact process

I. Name another catalyst which can be used in the process

.....(1mk)

II. Give two commercial uses of sulphuric (VI) acid (1mk)

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Intermediate Y - .....

(ii.) Name the process which leads to the formation of substance Z from the intermediate Y .....(1mk)

(iii.) Identify the reagent and the condition for step I

I. Reagent .....(1mk)

II. Condition .....(1mk)

(iv.) State one disadvantage of continued use of items made from compound formed on step I (1mk)

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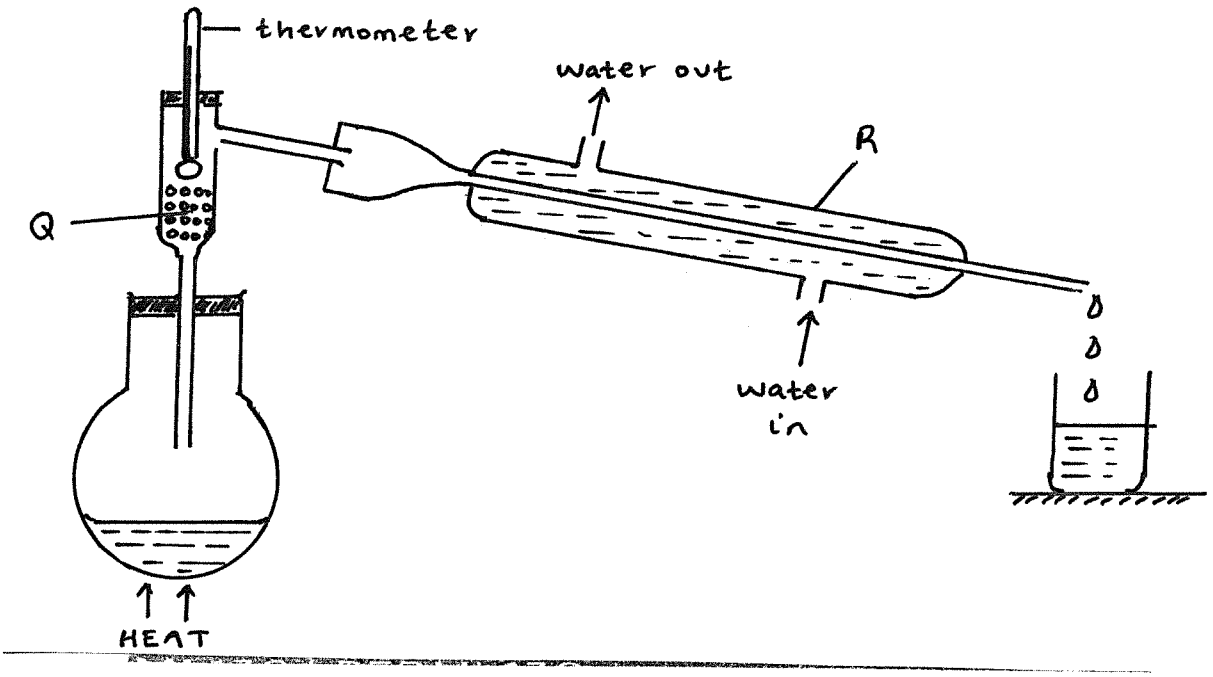
5.

(a.) The setup below was used to separate a mixture of methanol and propanol. Study it and answer the question that follow:



(i.) Name apparatus R .....(1mk)

(ii.) State the function of part Q .....(1mk)

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4.

(a.) Hydrocarbons are grouped into three homologous families of the following hydrocarbons

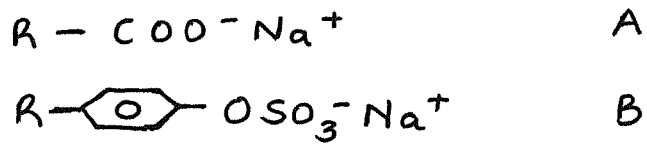
(i.) CH_3CCCH_3 .....(1mk)

(ii.) $CH_3CH_2CH_2CH_3$ .....(1mk)

(b.) Give the systematic name of the following organic compound; (1mk)

$CH_3COOCH_2CH_2CH_3$ .....

(c.) Below are structures of two cleansing agents



A

B

(i.) Identify the cleansing agent suitable to be used in water containing calcium chloride .....(1mk)

(ii.) State one advantage of using cleansing agent A (1mk)

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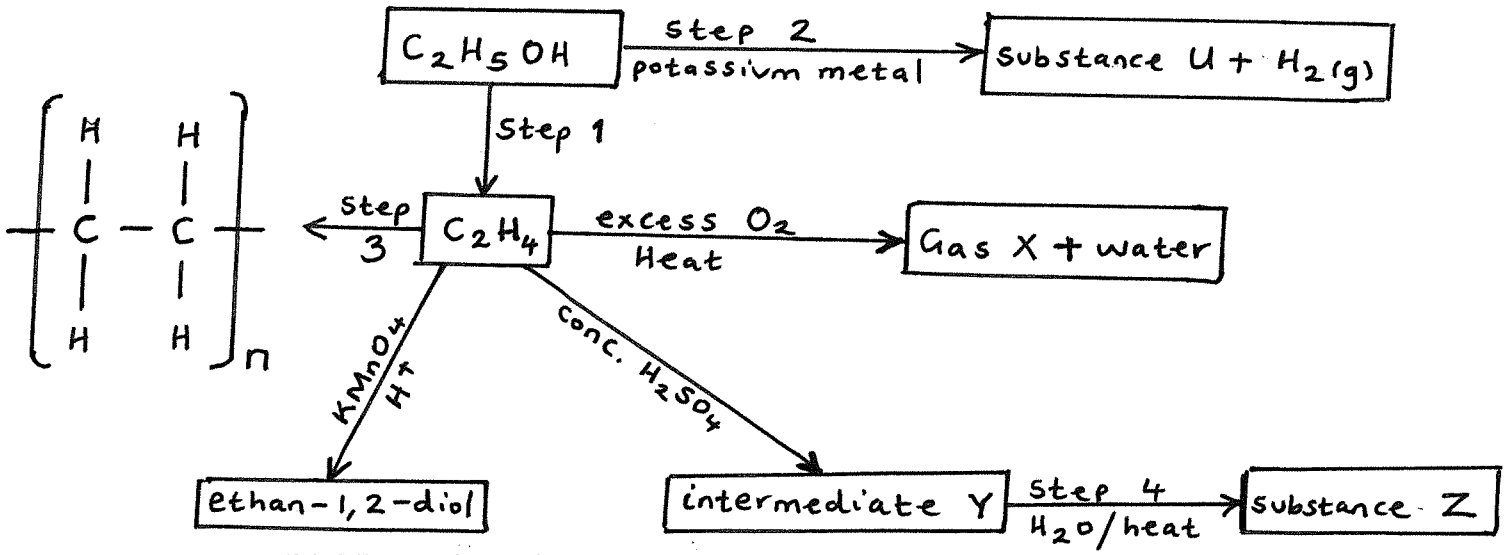
(d.) Study the flow diagram below and use it to answer the questions that follow.



(i.) Name the compounds: (3mks)

U - .....

Gas X - .....

(c.) Explain how calcium Hydrogen carbonate can end up in bore-hole water causing temporary water hardness (2mks)

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6.

(a.) The following are standard reduction potentials of some elements (the letters are not the actual symbols of the elements):

$M^{2+}_{(aq)} + 2e^- \longrightarrow M_{(s)}$; $E^\theta = -0.76V$

$N^{2+}_{(aq)} + 2e^- \longrightarrow N_{(s)}$; $E^\theta = +2.37V$

$P^{+}_{(aq)} + e^- \longrightarrow P_{(s)}$; $E^\theta = +0.80V$

$Q^{2+}_{(aq)} + 2e^- \longrightarrow Q_{(s)}$; $E^\theta = -0.14V$

i.) Draw a well labelled diagram of an M-P galvanic cell (3mks)

ii.) Determine the electromotive force (e.m.f) of the M-P galvanic cell drawn in 6 (a.) i.) above (2mks)

(iii.) Give the reason why the method can be used to separate the mixture .....(1mk)

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(iv.) Which liquid will be obtained first as the distillate? Explain .....(2mks)

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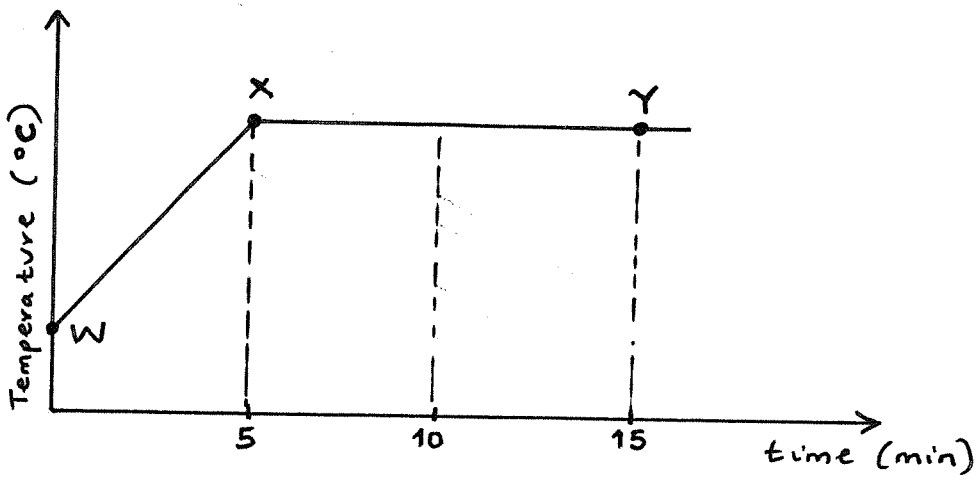
(b.) The graph below shows a curve obtained when a sample of water at 20°C was heated for 10 minutes



(i.) With a reason state whether the sample is pure or not (2mks)

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(ii.) State what happens to the water molecules between points W and X .....(1mk)

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(iii.) Explain the shape of part XY on the graph (2mks)

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iii.) The standard reduction potential of iron is -0.44V select the element that would best protect iron from rusting (1mk)

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iv.) Determine whether or not a solution of a nitrate metal of Q can be stored in a container made of metal N (2mks)

(b.) Aluminium metal can be extracted from the molten ore aluminium oxide. 1800 Kg of aluminium was obtained after electrolysis process (Al=27)

(i.) Write a half equation of the reaction that forms aluminium metal .....(1mk)

.....

(ii.) Calculate the quantity of electricity passed in faradays (2mks)

7.

(a.) Excess zinc carbonate was put in a beaker containing $100cm^3$ of dilute hydrochloric acid. The beaker was then placed on a balance and the total loss in mass recorded after every two minutes as shown in the table below

Time (mins)	0	2	4	6	8	10
Total loss in mass(g)	0	1.8	2.45	2.95	3.2	3.3

i.) Explain why there was a loss in mass (1mk)

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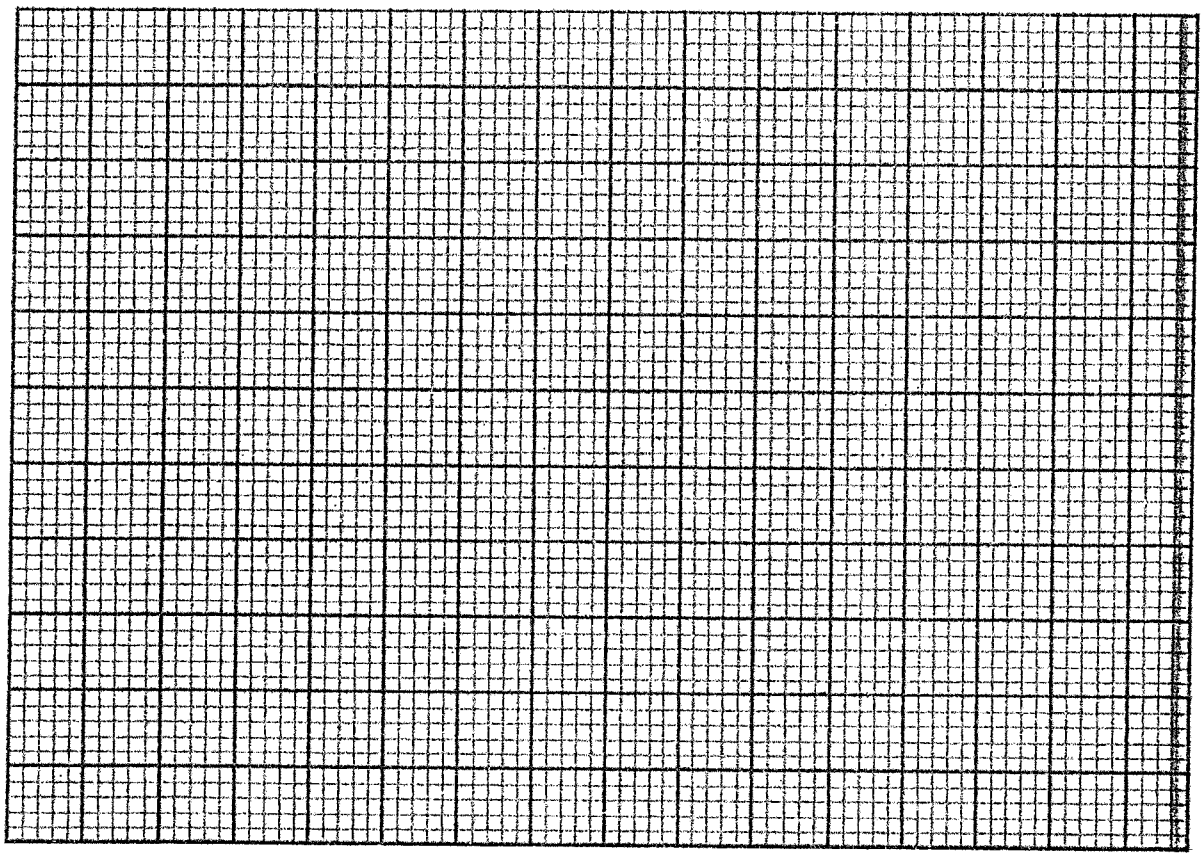
ii.) Plot a graph of total loss in mass against time (3mks)



iii.) From the graph calculate the average rate of change of mass between:

(I.) 0 and 2 minutes (1mk)

(II.) 6 and 8 minutes (1mk)

iv.) Explain the difference in the average rates of change in mass in iii.)(I) and (II) (2mks)

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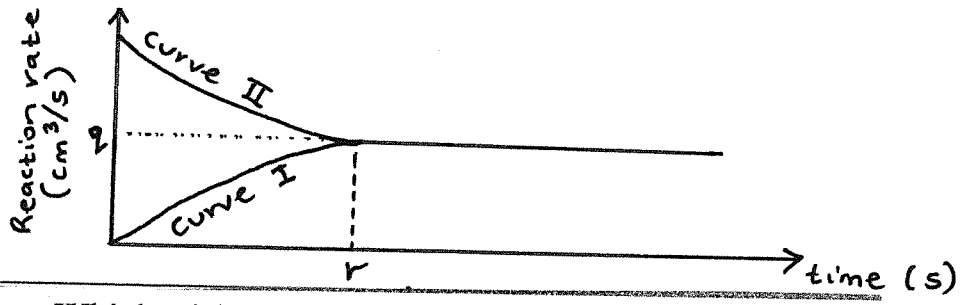
(b.) A dynamic equilibrium is represented by the following general equation:

$$A_{(g)} + B_{(g)} \rightleftharpoons 2C_{(g)} + D_{(g)}$$

The sketch below shows how the rate of the above reaction varies with time :



i.) Which of the two curves represents the reverse reaction. Give a reason for your answer (2mks)

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ii.) What the significance of points 'q' and 'r' on the graph? (2mks)

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NAME.....INDEXNO.....ADM NO.....

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ACK MASENO WEST JOINT EXAMINATION

KENYA CERTIFICATE OF SECONDARY EDUCATION

233/1 **CHEMISTRY (Theory)** **Paper 1**

March – 2025 – 2 hours

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 above.*
- *(c) Answer **all** the questions in the spaces provided in the question paper.*
- *(d) **Non-programmable** silent-electronic calculators and KNEC mathematical tables may be used.*
- *(e) All working **must** be clearly shown where necessary.*
- ***(f) This paper consists of 18 printed pages.***
- ***(g) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no question are missing.***
- ***(h) Candidates should answer the question in English.***

For Examiner's Use Only

QUESTIONS	MARKS OUT OF 80
1 – 27	

1. Elements X and Y have atomic numbers of 12 and 16, respectively. Using dots (.) and crosses (x), show how bonding takes place. (3mks)

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2. The table below shows elements of group X and group Y of the periodic table. The elements follow each other down the group as in the given order. Group X have a valency of 2.

Group X				Group Y		
Element	P	Q	R	K	L	M
Atomic radius (nm)	14.0	19.5	19.7	5.2	7.9	18.2
Ionic radius (nm)	8.6	11.5	12.4	12.7	16.00	19.4

a) The atomic radii of elements in group Y are smaller than the corresponding ionic radii for each element. Explain (1mk)

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b) State the general name given to elements in group X. (1mk)

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c) Give the formula of the compound that would be formed between Q and L (1mk)

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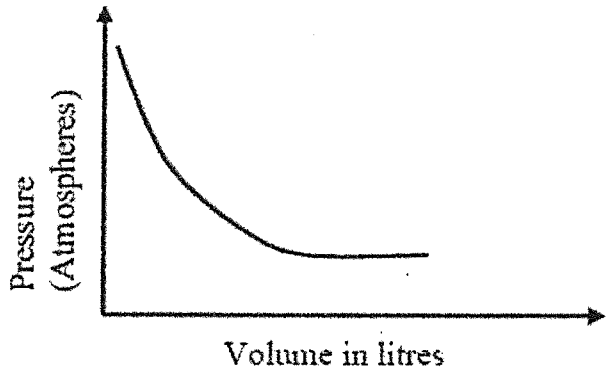
3. The graph below shows the behaviour of a fixed mass of a gas at constant temperature.



a) What is the relationship between the volume and the pressure of the gas? (1mk)

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b) 3 litres of oxygen gas at one atmosphere pressure were compressed to two atmospheres at constant temperature. Calculate the volume occupied by the oxygen gas. (2mks)

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4. The table below shows some properties of substances A, B and C. Study it and answer the questions that follow.

Substance	Melting point ^0C	Solubility in water	Electrical conductivity	
			Solid state	Molten state
A	659	Insoluble	Good	Good
B	1620	Insoluble	Poor	Poor
C	803	Soluble	Poor	Good

Select substance

I. With a metallic structure. (1mk)

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II. Is not likely to be an element. Give a reason. (2mks)

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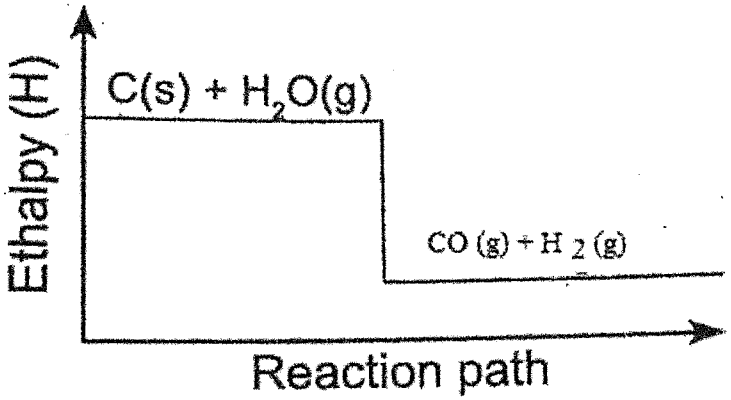
5. The diagram below is an energy level graph for reactants and products during a chemical

$C(s) + H_2O(g) \rightleftharpoons CO(g) + H_2(g)$



reaction.

a) What would be the effect on the position of equilibrium if temperature is increased? Explain. ($1\frac{1}{2}$mk)

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b) How would a decrease in pressure affect the amount of hydrogen gas? ($1^1/_2$mk)

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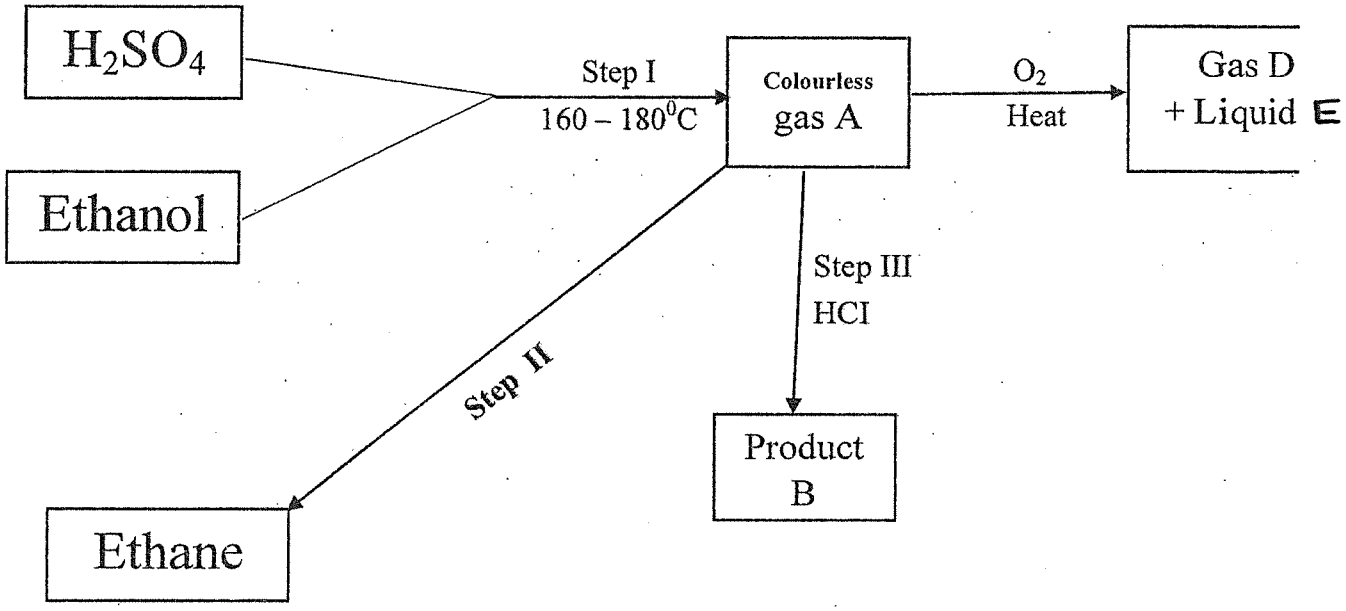
6. Study the reaction scheme below and answer the question that follow



a) Name;

I. Product B: ..... ($^1/_2$mk)

II. Liquid E: ..... ($^1/_2$mk)

b) Name the type of reactions taking place in step I and II

I. Step I: ..... ($^1/_2$mk)

II. Step II : ..... ($^1/_2$mk)

c) State the importance of the reaction taking place in Step II (1mk)

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7. Urea, (NH2)2CO, is prepared by the reaction between ammonia and carbon (IV) oxide.

$2NH_{3(g)} + CO_{2(g)} \longrightarrow (NH_2)_2CO_{aq} + H_2O_{(l)}$

In one process, 680kg of ammonia were reacted with excess carbon (IV) oxide. Calculate the mass of urea that was formed. **(H=1.0, C=12.0, N=14.0, O=16.0 and R.M.M of ammonia = 17)** (3mks)

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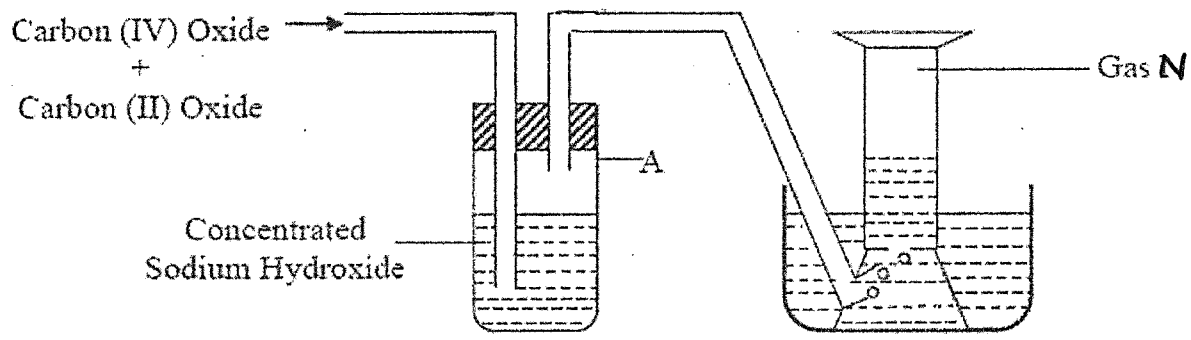
8. The diagram below represents part of a set up used to prepare and collect gas N.



a) Name two reagents that are reacted to produce both Carbon (IV) oxide and Carbon (II) oxide. (1mk)

.....

.....

b) Write the equation for the reaction which takes place in tube A. (1mk)

.....

.....

c) State the observation made when Gas N reacts with hot Copper (II) oxide. (1mk)

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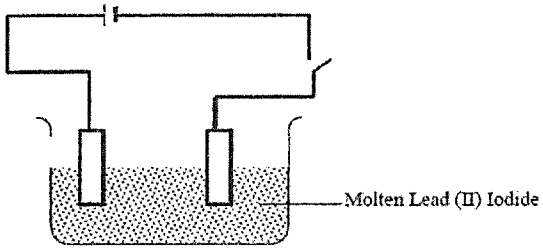
9. The diagram below shows a set-up which was used by a student to investigate the effect of electricity on molten Lead (II) Iodide.



I. Define the term electrolysis (1mk)

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II. Indicate the anode and cathode (1mk)

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III. Write the equation of the reaction at anode (1mk)

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10. The table below gives some properties of gases X and Y.

Gas	Density	Effects of $H_2SO_{4(aq)}$	Effects of $NaOH_{(aq)}$
X	Lighter than air	Reacts to form a salt	Dissolves without reactin
Y	Heavier than air	Not affected	Not affected

a) Describe how you obtain a sample of Y from a mixture of gases X and Y. (2mks)

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.....

b) Suggest a possible identity of gas X. Give a reason for your answer. (1mk)

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11. A white solid M was heated. It produced a brown gas A and a colourless gas. The residue left was yellow after cooling.

I. Name gases A and B. (2mks)

A .....

B .....

II. Write a balanced chemical equation for the decomposition of solid M (1mk)

.....

.....

12. Aqueous ammonia solution is added to a colourless solution **Y**. A white precipitate which dissolves in excess ammonia to form a colourless solution **P**.

a) Identify; (1mk)

I. The Cation present

.....

.....

II. The white precipitate (1mk)

.....

.....

b) Write an equation for the formation of the complex ion. (1mk)

.....

13. Below are pH values of some solutions.

Solution	**Z**	**Y**	**X**	**W**
pH	6.5	13.5	2.2	7.2

Which solution is likely to be

I. Acidc rain ..... (1mk)

II. Potassium hydroxide ..... (1mk)

III. Substance V reacted with both solutions Y and X. What is the nature of V. (1mk)

.....

.....

14. When 0.6g of element M was completely burned in oxygen, all the heat evolved was used to heat 500cm^3 of water, the temperature of the water rose from 23.0^{0}C to 32^{0}C. Calculate the Relative Atomic Mass of element M given that the specific heat capacity of water is 4.2Jg^{-1} K^{-1}, density of water is 1.0gcm^{-3} and molar heat of combustion of M is 380KJ/mol. (3mks)

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15. Naturally occurring magnesium consists of three isotopes: 78.6% ^{24}Mg, 10% ^{25}Mg and ^{26}Mg. Calculate to one decimal place, the relative atomic mass of magnesium. (3mks)

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16. Describe how a solid sample of copper (II) carbonate can be prepared starting with copper metal. (3mks)

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17. Solid A forms a mixture with liquid B. State two properties of substance A that would make decantation the method of choice for separating the mixture. (2mks)

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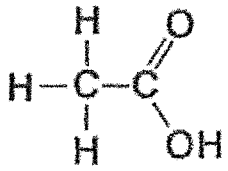
18. The structure of ethanoic acid



a) State the number of electrons used in bonding in a molecule of ethanoic acid. (1mk)

.....

.....

b) Give the name of the following organic compounds. (2mks)

I. $CH_3 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_2 - CH_3$

.....

.....

II. $CH_3C(CH_3)(Br)\ CH_2CH_3$

.....

.....

19. Hydrogen and bromine react according to the equation.

$H_{2(g)} + Br_{2(g)} \rightarrow 2HBr_{(g)}$

Use the bond energies given below to calculate the heat of formation of hydrogen bromide

Bond	**Energy (KJ/mol)**
H – H	436
Br – Br	192
H – Br	368

(3mks)

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20. When sulphur is heated in a boiling tube in the absence of air, the yellow crystals melts into a golden yellow mobile liquid at 113°C. The liquid changes at 180°C into a dark brown liquid that is very viscous. Heating at 400°C produces a brown less viscous liquid.

a) Draw the molecular structure of sulphur in the yellow liquid. (1mk)

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.....

.....

b) Name the allotropes of sulphur (2mks)

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21. A hydro carbon contains 80% Carbon, and its Relative Molecular Mass is 30. Calculate its molecular formula (C=12, H=1) (3mks)

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22. Describe a chemical test that can be used to distinguish between aqueous solutions of sodium carbonate and sodium hydrogen carbonate. (3mks)

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23. For each of the following experiments, give the observations and the type of change that occurs *(temporary physical or temporary chemical).*

Experiment	**Observation**	**Type of change**
A few drops of water are added to small amount of anhydrous copper (ii) sulphate		
A few crystals of iodine are heated gently in a test tube		

(b) In an experiment to determine the solubility of solid Q in water at 50^0C, the following data was obtained.

Mass of empty evaporating dish	=	46.5 g
Mass of evaporating dish + saturated solution	=	62.5 g
Mass of evaporating dish + dry solid Q	=	50.4 g

Use the data to calculate the solubility of solid Q. (2mks)

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26. The rate of a reaction depends on the concentration of reactants, temperature, and possibly a catalyst. A piece of magnesium ribbon was added to $100cm^3$ of 1M HCl. The hydrogen evolved was collected and its volume was measured after every 30 seconds. Draw a set up to represent this information. (3mks)

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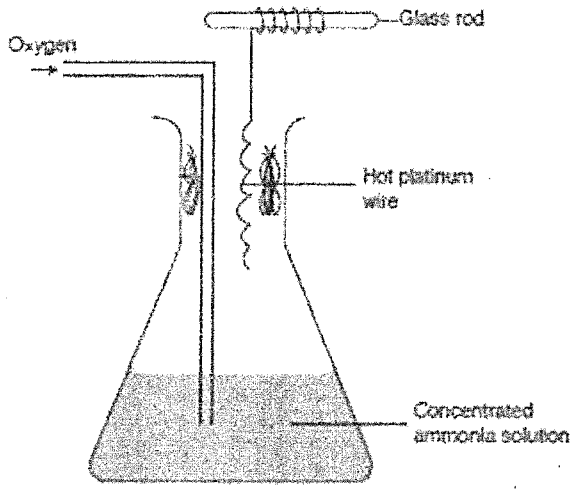
24. The set-up below shows the catalytic oxidation of ammonia in the laboratory.



(a) State and explain the observation made. (2mks)

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(b) Write a chemical equation for the first reaction taking place in the conical flask. (1mk)

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25.(a) Define the term solubility (1mk)

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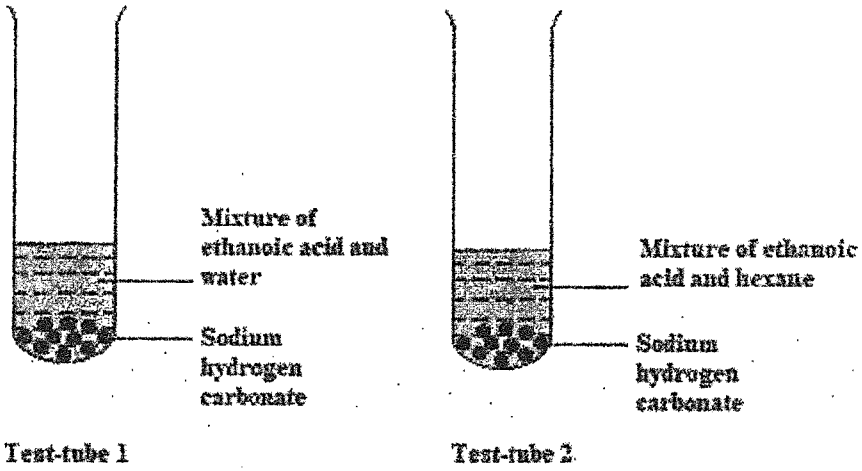
27. In an experiment, a student put equal volumes of mixtures of ethanoic acid in water and ethanoic acid in hexane in two test tubes as shown below. In each test tube, equal amounts of solid sodium hydrogen carbonate were added.



(a) State the observation which was made in each test-tube I (1mk)

.....

.....

Test Tube II

.....

.....

(b) Explain the observations in (a) above (2mks)

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THIS IS THE LAST PRINTED PAGE.

NAME.....INDEXNO.....ADM NO.....

SCHOOL.....SIGN.....DATE.....

ACK MASENO WEST JOINT EXAMINATION

KENYA CERTIFICATE OF SECONDARY EDUCATION

565/2 BUSINESS STUDIES Paper 2

Time:2hours 30 minutes

INSTRUCTIONS TO CANDIDATES:

(a) *Write your name and index numbers in the spaces provided*
(b) *All answers should be written in the spaces provided in this booklet.*
(c) *Answer any five questions.*

For Examiner's Use Only

Qs	1 (a)	(b)	2 (a)	(b)	3 (a)	(b)	4 (a)	(b)	5 (a)	(b)	6 (a)	(b)	Total scores
Marks													

1.a) Explain **five** importance of entrepreneurship to an economy (10mks)

b) Explain FIVE sources of finance open to Kenya government. (10mks)

2.a) Highlight FIVE differences between a private limited company and public corporation (10mks)

b) Maendeleo Traders have the following information in their books of account on 31st December 2024.

	Kshs.
Stock (01/01/2024)	6,000
Sales	100,000
Return-in	2,000
Return-out	2,800
Carriage-in	1,000
Carriage-out	1,500
Purchases	88,000
Stock (31/12/2024)	4,000
Commission earned	3,500
Discount allowed	2,200
Sunday expenses	4,000
Discount received	4,400
Postage	800
Stationery	1,200

REQUIRED

(i) Prepare a trading profit and loss account for Maendeleo Traders (8mks)

(ii) Calculate - Mark –up (1mk)

(iii) - ROSTO (1mk)

3 (a) Explain **five** negative effects of an increasing population. (10mks)

b) Use the demand and supply schedule given below to draw a diagram showing the following;

(i) Demand and supply curves
(ii) Equilibrium quantity, equilibrium price and equilibrium point
(iii) Excess demand and excess supply

Price	Quantity demanded	Quantity supplied
450	10	70
400	20	60
350	30	50
250	40	40
150	50	30
50	60	20
10	70	10

(10mks)

4 a) Explain **five** ways in which central Bank of Kenya regulates the operations of commercial banks in Kenya. (10mks)

b) A farmer in Kitale has maize to transport to Mombasa. He could either use road or railway transport. Explain to him **five** merits of using road instead of railway to transport the maize. (10mks)

5 a) Explain five reasons for government involvement in business activities. (10mks)

b) Prepare a duly balanced three column cash book from the following information.

Jan 1: Balance b/d cash shs.4,000 bank shs 27,000
" 4 Settled Olweny creditors account of shs. 8,000 by cheque having deducted 6% cash discount.
" 8: Received shs. 6000 cash from Mutoma traders
" 16: Deposited shs. 4,500 to the bank account
" 24: Withdrew shs. 9,200 from the bank for private use.
" 29: Received shs. 19,950 from Kawawa by a cheque after allowing 5% discount.
" 31: Banked all the cash leaving only sh 1,500 in the office. (10mks)

6 a) Explain **five** factors that influence decisions on what goods and services to Produce. (10mks)

b) Explain **five** circumstances under which an insurance contract may be terminated. (10mks)

NAME.....INDEXNO.....ADM NO.....

SCHOOL.....SIGN.....DATE.....

ACK MASENO WEST JOINT EXAMINATION

KENYA CERTIFICATE OF SECONDARY EDUCATION

565/1

BUSINESS STUDIES

PAPER 1

MARCH, 2025

DURATION ; 2 HOURS

TERM 1 – 2025

INSTRUCTIONS TO THE CANDIDATES

a) Write your name and Admission Number in the spaces provided above
b) Sign and write the date of the examination in the spaces provided.
c) This paper consists of 25 questions
d) Answer ALL questions in the spaces provided.
e) Candidate should answer the questions in English.

FOR EXAMINEER'S USE ONLY

QUESTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14
MARKS														

QUESTION	15	16	17	18	19	20	21	22	23	24	25

TOTAL MARKS

1. State **four** ways in which economic environment may negatively affect the performance of a business. (4 mks)

a).....

b) .....

c).....

d).....

State any **four** circumstances under which a business would adopt cash with order (C.O) policy in payments.

a).....

b).....

c).....

d).....

3. Outline any **four** components of an efficient transport system. (4 mks)

a).....

b) .....

c).....

d).....

4.The following items were recorded in the books of kodongo Enterprises.

	sh
Opening stock	14,000
Purchase	80,000
Sales	150,000
Return inwards	5,000
Return outwards	10,000
Closing stock	8,000

Required:

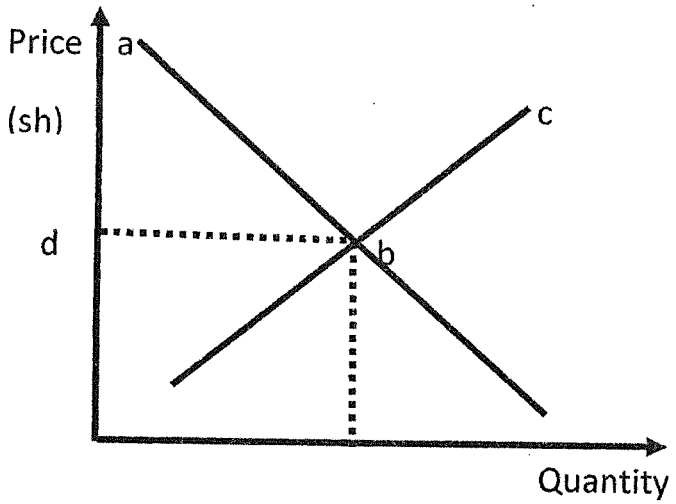
a) Calculate the cost of goods sold (2 mks)

b) Determine margin percentage (3 mks)

5.Outline any **four** reasons why many Kenyans shy away from taking insurance cover (4mks)

a).....
.....
b) .....
.....
c).....
.....
d).....
.....

6.In the diagram below ,name the parts labelled a,b,c and d (4 mks)



a_____

b_____

c_____

d_____

7.State any **four** reasons for government involvement in business activities (4mks)

a).....

b) .....

c).....

d).....

8.Identify any **four** rewards to labour as a factor of production (4mks)

a).....

b) .....

c).....

d).....

9. State **four** causes of unemployment in Kenya .(4 mks)

a).....

b) .....

c).....

d).....

10. Indicate in the spaces below the relevant factor of production associated with the following resources (4 mks)

RESOURCES	FACTOR OF PRODUCTION
a) Water	
b) Manager	
c) proprieter	
d) vehicles	

11. State any **four** characteristics of good money system (4yrs)

a).....

b) .....

c).....

d).....

12. State any **four** situations that indicate the existence of a business opportunity.

(4 mks)

a).....

b) .....

c).....

d).....

3. State any **four** accounting documents used in home trade. (4 mks)

a).....

b) .....

c).....

d).....

14.State any **four** reasons why an increase in income per capital may not necessarilylead to an increase in standard of living.

a).....

b) .....

c).....

d).....

15. State **four** monetary tools that can be used by the central Bank of Kenya to reducethe amount of money in circulation (4 mks)

a).....

b) .....

c).....

d).....

6. the following is the credit side of a three column cash book.

ate	Details	A	B	C	D

ame the column marked A ,B ,C and D

A. .....

B. .....

C. .....

D. .....

. State any **four** unethical issues in entrepreneurship (4 mks)

a).....

b) .....

c).....

d).....

18. In the table below, indicate the account to be debited and the account to be credited in each case.(4 mks)

TRANSACTION	A/C DEBITED	A/C CREDIT
a)withdraw sh 4,000 cash for personal use		
b)paid rent of sh 3,000 by cheque		
c)purchased goods worth sh 10,000 credit		
d)Deposited business cash to bank account		

19.State **four** roles of the Nairobi Stock Exchange market (4 mks)

a).....

b) .....

c).....

d).....

20.The following information was extracted from the books of maseno traders

Rate of stock turnover	3 times
Mark-up	20%
Opening stock	160,000
Closing stock	200,000

Required: calculate

a)Gross profit (2 mks)

b)Sales (2 mks)

21. Human wants have become increasingly difficult to satisfy, Outline any four reasons that can be undertaken by man to address that can be undertaken by man to address this challenge. (4 mks)

a).....

b) .....

c).....

d).....

22.Prepare Hekima Traders Trial balance at 30th april 2020 given the following items recorded. (5 mks)

Bank Overdraft	48,000
Debtors	26,500
Capital	102,000
Stock	84,000
Creditors	73,000
Discount allowed	28,000
Rent received	48,000
Mortgages	200,000
Land	236,500
Cash	96,000

23. State any **THREE** categories of public expenditure. (3 mks)

a).....

b) .....

c).....

24. Outline any **four** trends in communication (4 mks)

a).....

b) .....

c).....

d).....

25. Identify the book of original entry where each of the following transactions maybe recorded .

TRANSACTIONS	BOOK OF ORIGINAL ENTRY
a)Bought goods on credit	
b)Sold an office on credit	
c)Some goods were returned back to the supplier	
d)Sold goods in cash	

NAME.....INDEXNO.....ADM NO.....

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ACK MASENO WEST JOINT EXAMINATION

KENYA CERTIFICATE OF SECONDARY EDUCATION

231/3

BIOLOGY

PAPER 3

MARCH/APRIL 2025

TIME: $1\frac{3}{4}$ HOURS

INSTRUCTIONS

(a) Write your name and index number in the spaces provided above

(b) Sign and write the date of examination in the spaces above

(c) Answer all questions in the spaces provided.

(d) You are required to spend the first 15 minutes of the $1\frac{3}{4}$ hours allowed fo this paper reading the whole paper carefully before commencing your work.

(e) Candidates should answer all questions in English.

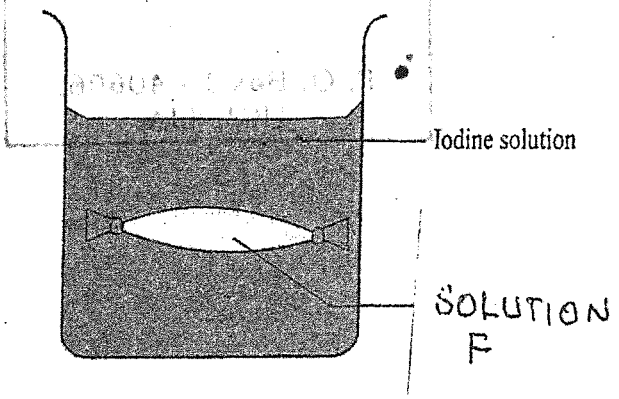
QUESTION	MAXIMU SCORE	CANDIDATES SCORE
1	12	
2	15	
3	13	
TOTAL SCORE	40	

1. a) You are provided with the following; 10cm visking tubing, Iodine solution in 100ml Beaker, cotton thread and solution F, wash bottle.

Procedure.

- Tie one end of visking tubing tightly.
- Put solution F in the visking tubing until three – quarters full.
- Tie the other end of the tubing tightly. Ensure there is no leakage at both ends of the visking tubing.
- Clean outer surface of visking tubing with clean water in wash bottle.
- Place the visking tubing containing solution F in the beaker containing Iodine solution and allow the set up to stand for 30 minutes.
- Record your observations in the table below

Set up



	Colour of content in visking tubing
Start of experiment	
End of experiment	

2marks

ii) Account for the observation in (i) above. 3marks

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.....

iii) State the physiological process being demonstrated in the set – up above. 1mark

.....

iv) Give a reason why the visking tubing is cleaned after putting solution F. 1mark

.....

.....

v) State the steps of digestion of the food substance in F and enzymes involved at the following sites of the alimentary canal. 4marks

a) Mouth

Enzyme.....s.....

Food substance in F ↓ .....R.....

S:.....

R:.....

b) Ileum

R ⟶ .....P.....

↑

Enzyme..... Q.....

P:.....

Q:.....

VI) State the group of carbohydrates in which food substance in F belongs to. 1mark

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.....

2a) You are provided with plant leaf E, F, G, H.Use the specimen to develop a dichotomous key that can be used to identify the plants which they were obtained from, based on the following characteristics in the order given. 6marks

- Leaf type
- Leaf venetian
- Leaf margin

ii) Explain two ways in which the stem of specimen E, adapts the plant for maximum photosynthesis. 2marks

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b) You are provided with specimen S, observe it keenly and answer the questions that follow

i) Draw the section of specimen S and label any two parts. 3marks

ii) With reasons in each case, State the type of fruit and method of dispersal of specimen S. (4mks)

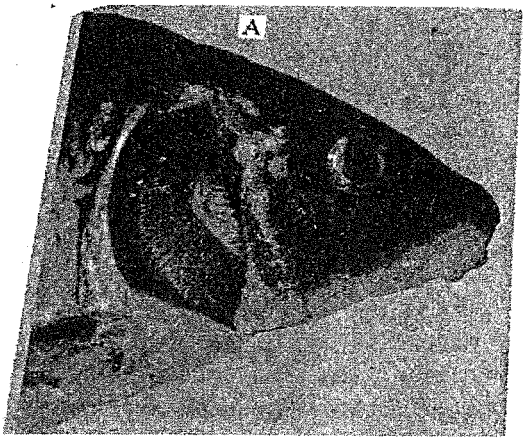
Types of fruit:.....

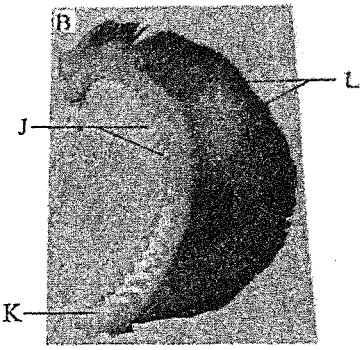
Reason:.....

Method of dispersal:.....

Reason:.....

3 Photograph A below is the head of a bonny fish in which none of the external structures has been removed to expose the underlying internal organs. Photograph **B** is a magnified view of one of the exposed internal organs. Examine them.





a) Name the exposed internal organ in photograph A. 1mark

.....

b) Name the external structure that was removed in photograph A. 1mark

.....

c) With a reason identify the class to which the organism in photograph A belongs to:

2marks

Class:.....

Reason:.....

d) Draw a diagram of organ in photograph B and label parts J, K, L giving their identity.

5marks

ii) Outline two adaptations of part labeled L to its function. 2marks

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.....

e) Give a similar part in class Mammalia and state the common functions performed by the organs.

2marks

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NAME.....INDEXNO.....ADM NO.....

SCHOOL.....SIGN.....DATE.....

ACK MASENO WEST JOINT EXAMINATION

KENYA CERTIFICATE OF SECONDARY EDUCATION

231/2
BIOLOGY
Paper 2 (THEORY)
March 2025
2 hours

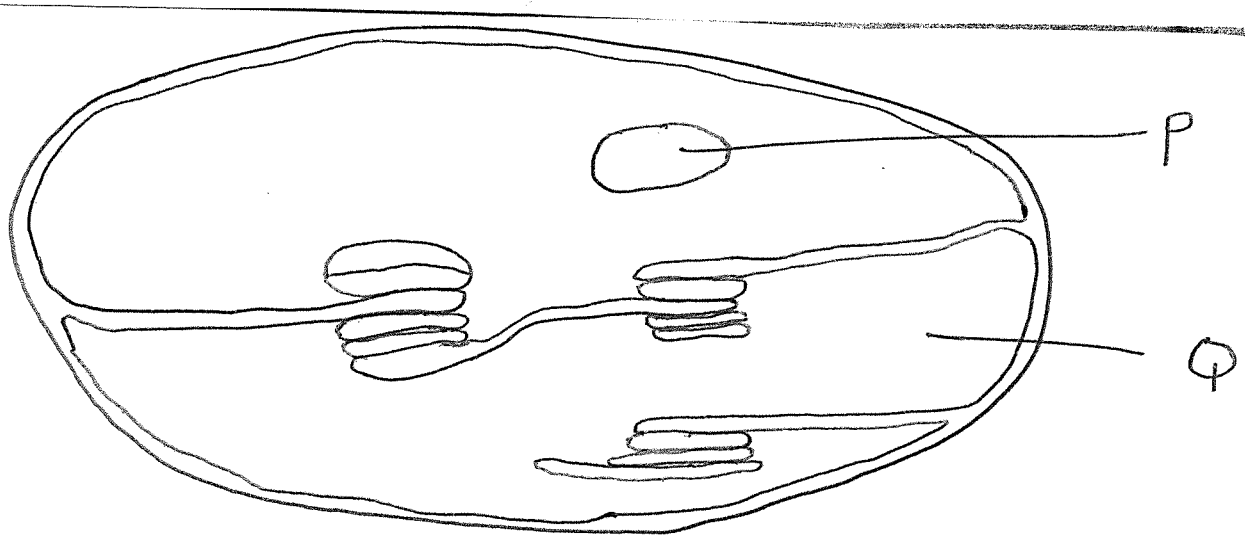
Instructions to candidates

(a) Write your name and index number in the spaces provided above.
(b) Sign and write the date of the examination in the spaces provided above.
(c) This paper consists of two sections; A and B.
(d) Answer all the questions in section A in the spaces provided
(e) In section B answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8.
(f) This paper consists of 12 printed pages.
(g) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.
(h) Candidates should answer the questions in English.

For Examiner's Use Only

Section	Question	Maximum Score	Candidate's Score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	

1. The diagram below shows one of the structures found in plant cell



(a) Identify the organelle (1mk)

.....

(b) Name the physiological process that occurs in the structure named above (1mk)

.....

(c) (i) Name the structure you would expect to find chlorophyll molecules (1mk)

.....

(ii) Identify the structure where photolysis takes place (1mk)

.....

(iii) State the importance of photolysis in the process named in (b) above (2mks)

.....

.....

.....

(d) Name the parts labelled P and Q (2mks)

P _____

Q _____

2. In human beings the ability to taste phenylthiourea depends upon the presence of a dominant gene "T"

(a) Perform a cross between a homozygous 'taster' and a 'non-taster' in order to determine the genotypes and phenotypes of F_1 generation. (4mks)

(b) Determine the phenotypic ratio of the F_2 generation (3mks)

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(c) What is the probability of getting a 'non-taster' in F_2? (1mk)

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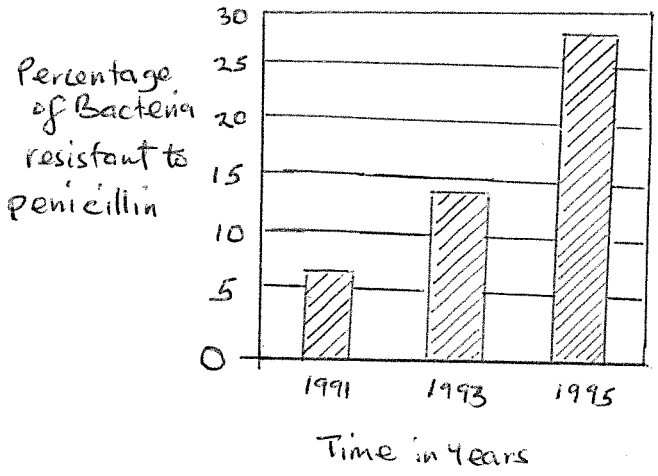
3. (a) The figure below shows the change in percentage of disease-causing bacteria that were resistant to the antibiotic penicillin from 1991 to 1995.



(i) Describe the change in percentage of bacteria resistant to penicillin between 1991 and 1995 (2mks)

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(ii) Explain how a population of antibiotic-resistant bacteria can develop (4mks)

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(b) How does convergent evolution occur? (2mks)

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4. (a) A student left a damp piece of bread on an open plate accidentally. Three days later, he observed some black substances developing on the bread.

(a) i) Suggest the identity of the black substance that grew on the bread (1mk)

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ii) State the mode of reproduction shown by the organism named above (1mk)

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(iii) State the kingdom to which the organism belongs (1mk)

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(b) Draw and label a complete structure of the organism named in (a) (i) above (3mks)

(c) State the role played by members of the kingdom named in (a) (iii) above to the ecosystem (2mks)

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5. By giving specific examples in each case, state the importance of carbohydrates (8mks)

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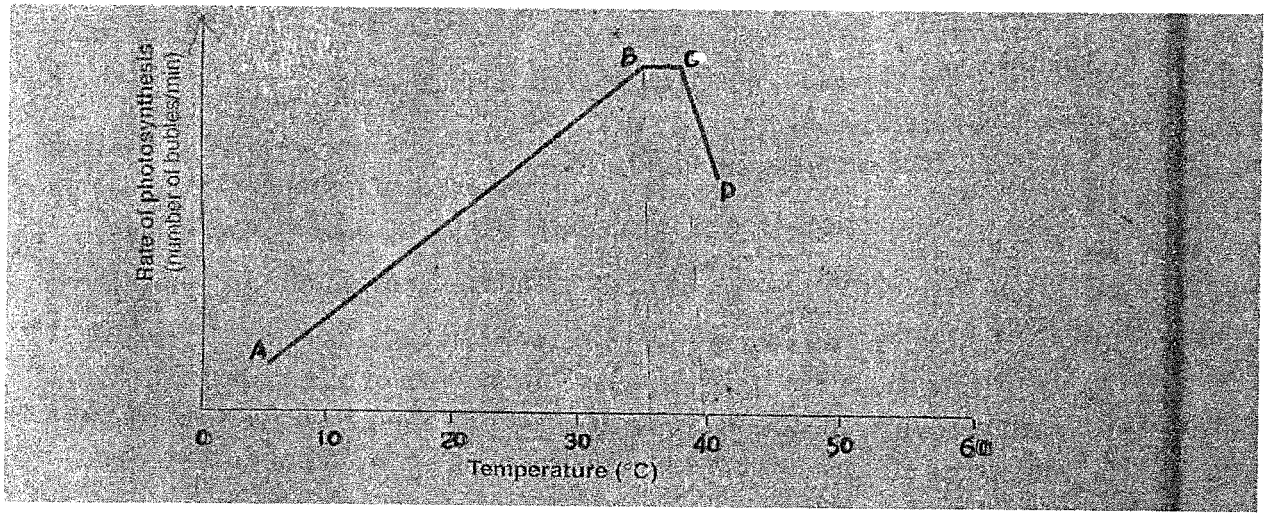
SECTION B (40MKS)

Answer question 6 (Compulsory) and either question 7 0r 8 in the spaces provided after question 8.

6. The graph below represents the results of an experiment to measure the rate of photosynthesis of a green alga at different temperatures. The rate of was determined by the number of bubbles of gas given off in unit time. The light intensity and available carbon dioxide were maintained constant.



(a) (i) What type of gas was given off by the plant? (1mks)

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(ii) State how you would identify the gas named in (a) (i) above (1mk)

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(b) Explain part AB of the graph (2mks)

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(c) What does point B on the graph signify? (2mks)

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(d) What does part BC indicate? (4mks)

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(e) Explain part CD (5mks)

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(f) Name three cells in plants where photosynthesis occurs (3mks)

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(g) In a dense forest, explain why there is no grass growing underneath(2mks)

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7. (a) i) What is a microscope? (1mk)

(ii) State two uses of a microscope (2mks)

(b) Describe the stepwise procedure of observing a prepared slide using a light microscope under high power (17mks)

8. (a) Describe the role played by water and temperature in germination (13mks)

(b) (i) What is metamorphosis? (1mk)

(ii) Differentiate between complete metamorphosis and incomplete metamorphosis (2mks)

(iii) State the advantages of metamorphosis. (4 marks)

NAME.....INDEXNO.....ADM NO.....

SCHOOL.....SIGN.....DATE.....

ACK MASENO WEST JOINT EXAMINATION

KENYA CERTIFICATE OF SECONDARY EDUCATION

231/1
BIOLOGY
Paper 1
(Theory)

March/April 2025
TIME: 2Hours

INSTRUCTIONS TO CANDIDATES

- ✓ *Write your **name** and **admission number** in the spaces provided at the top of this page.*
- ✓ *Sign and write the date of examination in the spaces provided above.*
- ✓ *This paper consist of a single section.*
- ✓ *Answer all questions in the spaces provided.*

For Examiners Use Only

QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
1 -30	80	
TOTAL SCORE		

1. Name the branch of biology that deals with the study of :-

   (i) Hawks, eagles, parrots..... (1mark)

   (ii) Bees, ants, termites..... (1mark)

2. (a) State **two** ways by which the skin prevents entry of micro-organisms into the body.(2marks)

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   (b) Name the type of cell that destroys micro-organisms in the human body. (1marks)

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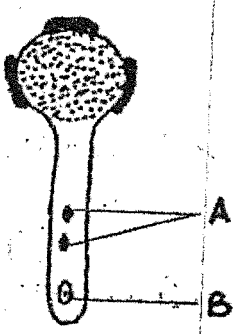
   (c) Name the component of blood that facilitates conversion of fibrogen to fibrin. (1mark).....

3. The diagram below illustrates a growing pollen tube.



   (a) Name the part labeled **B** ..... (1mark)

   (b) Explain the role of the part labelled **A** (2marks)

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4. Distinguish between monoecious plant and dioecious plant. (2marks)

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5. Explain the term positive feedback mechanism as used in homeostasis. (1mark)

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6. Define the following terms as used in cell physiology
   (a) Haemolysis (1mark)

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   (b) Flaccid cell (1mark)

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7. The diagram below shows an organism in a certain kingdom.
   (a) Name the Kingdom to which the organism belongs (1mark)

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   (b) State the mode of nutrition for the organism. (1mark)

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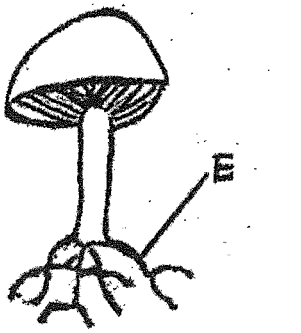

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   (c) Name the part labelled E and state its function.

   Part..... (1mark)

   Function..... (1mark)

8. Explain why most athletes prefer training from high altitude areas (3marks)

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9. In an experiment, a mouse was observed to have inhaled 200cm^3 of oxygen and exhaled 199.75cm^3 of carbon (IV) oxide in ten minutes.
   (a) Calculate the respiratory quotient for the activity. (2marks)

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(b) Identify the possible food substance consumed by the mouse (1mark)

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(c) State the fate of excess food consumed in (b) above in the human body (1mark)

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10. Name **two** substances that would be used in hydrolysis of dissacharides in body tissues. (2marks)

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11. In an experiment a group students set up the apparatus below in the laboratory and made observations after 72 hours.

(a) Explain how inclusion of sodium hydroxide solution would affect the mouse in the experiment. (3marks)

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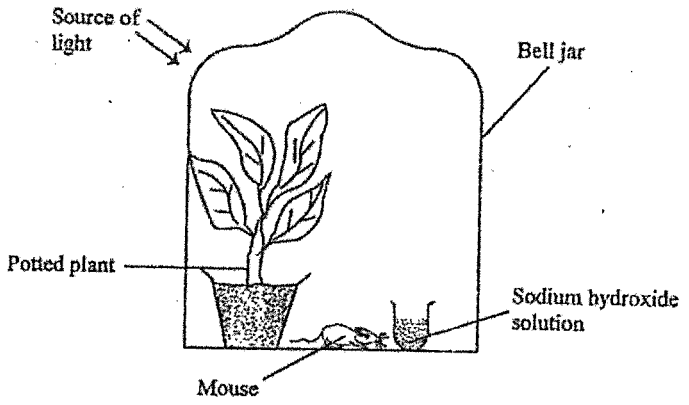

(b)State why the students preferred to use a bell jar and not a tin box in the experiment. (1mark)

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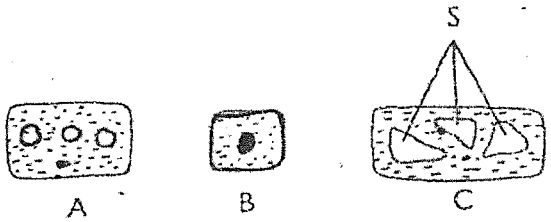
12. Below are cells found at different zones in a shoot tip.



(a) Name the zone in which cell A is found (1mark)

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(b) State **two** characteristics of cells in the zone from where B was obtained (2marks)

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(c) The preceding zone does not have a representative cell. Identify the zone. (1mark)

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13. State **one** use for each of the following apparatus in the study of living organisms.

(i) Bait trap..... (1mark)

(ii) Specimen bottle..... (1mark)

14. A student observed an organelle using an electron microscope of magnification X800. Its diameter was 2 millimeters. Calculate the actual diameter of the organelle in micrometers.

(3marks)

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15. (a) Distinguish between diffusion and active transport (2marks)

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(b)A group of form one students, while investigating on the process of osmosis were advised to use the tissues from fresh raw potato rather than the boiled potato tissue. Explain. (2marks)

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16. Name a disease caused by lack of each of the following in human beings.

(i) Vitamin C..... (1mark)

(ii) Iodine..... (1mark)

17. State **two** ways by which lactic acid formed in the muscles of an athlete is removed. (2marks)

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18. What are the advantage of desert animals excreting their nitrogenous waste in form of urea and not ammonia? (2marks)

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19. Explain why a bat is classified as a mammal yet it flies. (2marks)

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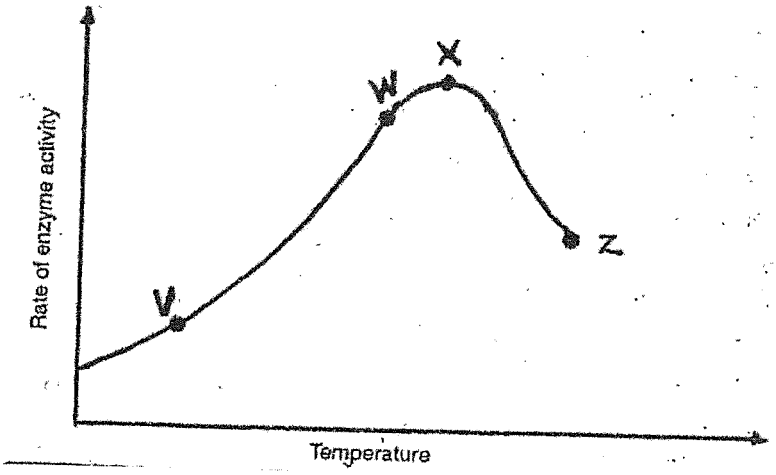
20. The graph below shows the rate of enzyme action in relation to changes in temperature. Account for the observations in each case for the rate of enzyme action.



(i) Between V and W (1mark)

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(ii) At X (1mark)

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21. A grade six pupil observed a bird laying eggs that hatched into chicks. State any <u>two</u> characteristics of living things displayed. (2marks)

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22. Define the term Binomial Nomenclature (2marks)

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23. (a) Why are there no carrier males in haemophiliac condition? (1mark)

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(b) What is polyploidy? (1mark)

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24. (a) Identify major photosynthetic cells in the leaves of terrestrial plants (1mark)

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(b) Identify the location of the cells (1mark)

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25. (a) State the composition of an ecosystem. (2marks)

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(b) Explain why an ecosystem is said to be self-sustaining (2marks)

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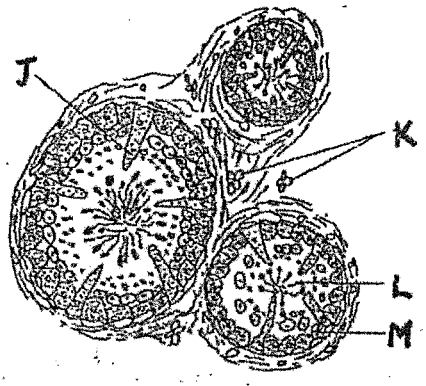
26. A cross section of the epididymis of a human male reveals the following details.



(a) Name the part labelled J (1mark)

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(b) State the function of the part labelled K (1mark)

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(c) Cell M is a diploid cell from which structure L is formed.

(i) By what type of cell division does structure L arise from cell M (1mark)

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(ii) State the number of chromosomes in L (1 mark)

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27. (a) What is natural selection? (1 mark)

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(b) What are the advantages of natural selection? (2marks)

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28. Name fully the responses described below:-

(a) Euglena swims towards water surface (1 mark)

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(b) A mosquito flies away from an insect repellant (1 mark)

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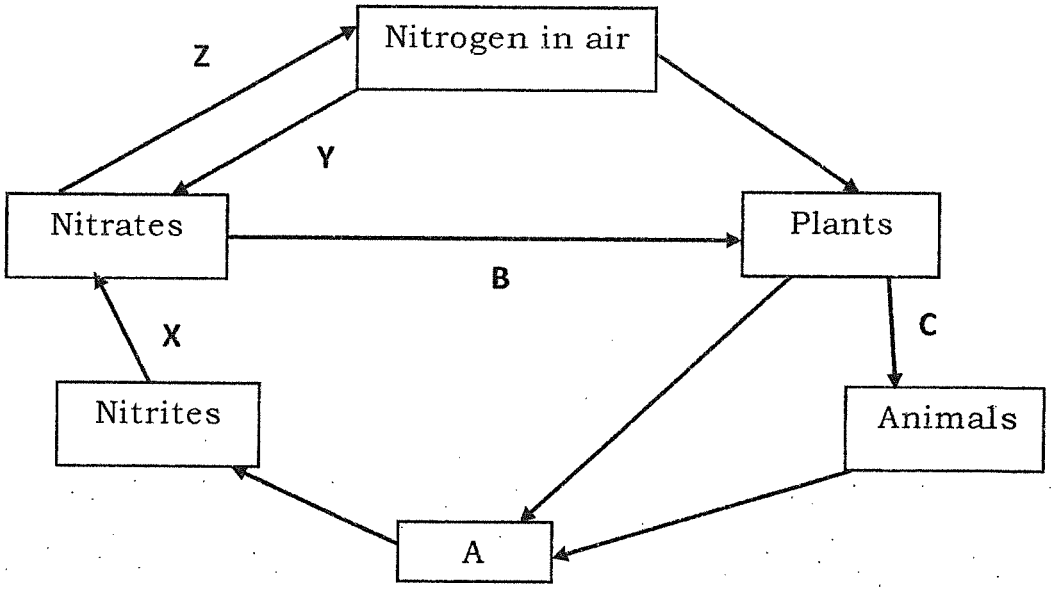
29. Below is a simplified drawing of the nitrogen cycle



(a) Identify the compound A. (1mark)

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(b) Name the processes labelled B, X and Y (3marks)

B: .....

X: .....

Y: .....

30. State the units that constitute a nucleotide portion in a DNA strand. (1mark)

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