KCSE 2024 REPLICA

BIOLOGY PRACTICAL

(PREDICTION EXAMS 1-10)

Confidential set of Possible Questions likely to be examined in the forthcoming Final Examinations. A Projection of what is likely to be tested in the much-awaited KNEC Exams scheduled for November 2024.

Series of Sampled Top Performing Schools Possible Practical Questions in Biology Paper 3 Expected in the Forthcoming Annual Final KCSE Examinations for our Candidates.

CONFIDENTIAL!

For Marking Schemes
Mr Isaboke 0746 222 000 / 0742 999 000

THE KEY TO SUCCESS!

KCSE 2024 REPLICA EXAMS

BIOLOGY PRACTICAL

PREDICTION 1 PRACTICAL

Confidential

The information contained in this **KCSE prediction paper** is to enable the head of the school and the teacher in charge of Biology to make adequate preparations for the **231/3 Biology Practical** examination.

No one else should have access to this information either directly or indirectly.

INSTRUCTIONS

Each Candidate will require the following:-

The photographs should be coloured

- ***a)*** *Scalpel*
- ***b)*** *Means of timing*
- ***c)*** *5ml of Sodium hydrogen carbonate solution labelled* ***H***
- ***d)*** *5ml of 10% Starch solution labelled* ***E***
- ***e)*** *Four labels*
- ***f)*** *Four clean dry test tubes.*
- ***g)*** *4ml of cooking oil in a test tube*
- ***h)*** *One Irish potato tuber, Solanum tuberosum*
- ***i)*** *10ml measuring cylinder*
- ***j)*** *A dropper*
- ***k)*** *Ruler*
- ***l)*** *Spatula*

Each student will require access to the following;

- ***a)*** *Mortar and pestle*
- ***b)*** *Iodine solution supplied in a dropper bottle*
- ***c)*** *Distilled water in a wash bottle*
- ***d)*** *Benedict`s solution in a dropper bottle*
- ***e)*** *Source of heat*

KCSE 2024 REPLICA EXAMS

BIOLOGY

PREDICTION 1 PRACTICAL

TIME: 1 ¾ HOURS

NAME…… INDEX NO……..…

SCHOOL…….. SIGN…….

DATE……....

INSTRUCTIONS TO CANDIDATES

a) *Write your name, admission number, date, and signature and school name in the spaces provided.*

b) *Answer **ALL** the questions in the spaces provided in the question paper*

c) *You are NOT allowed to start working with the apparatus for the first 15 minutes of the **1¾ hours** allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus that you may need.*

d) *Additional pages must **not** be inserted*

FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. You are provided with cooking oil, liquids **H** and **E** and an Irish potato.

(a) Label two test tubes **A** and **B**. Place 2cm3 of water into each test tube. Add 8 drops of the cooking oil into each test tube. To the test tube labelled **A**, add 8 drops of liquid **H**. Shake both test tubes. Allow to stand for 2 minutes.

i) Record your observations. **(2marks)**

Test tube **A**

……

……

Test tube **B**

……

……

ii) Name the process that has taken place in test tube **A**. **(1mark)**

……

iii) State the significance of the process named in (a) (ii) above. **(1mark)**

……

……

iv) Name;

The digestive juice in humans that has the same effect on oil as liquid **L.** **(1mark)**

……

The region of the alimentary canal into which the juice named in (a) (iv) above is secreted **(1mark)**

……

(b) Label one test tube **C**.

Place 2cm3 of liquid **E** into the test tube. Add a drop of iodine solution into the test tube.

(i) Record your observation **(1mark)**

……

……

(ii) Suggest the identity of **E** **(1mark)**

……

……

(c) Cut out a cube whose sides are about 2cm from the Irish potato provided.Crush the cube to obtain a paste. Place the paste into the test tube labelled **C** containing **E** and iodine solution from (b) above. Leave the set up for at least 30 minutes.

i) Record your observations. **(1mark)**

……

……

ii) Account for the results in (c) (i) above. **(3marks)**

……

……

……

……

(d) (i) Cut out another cube whose sides are 1cm from the Irish potato provided. Crush the cube to obtain a paste. Use the paste to carry out food test with Benedict`s solution and record the results. **(1mark)**

……

……

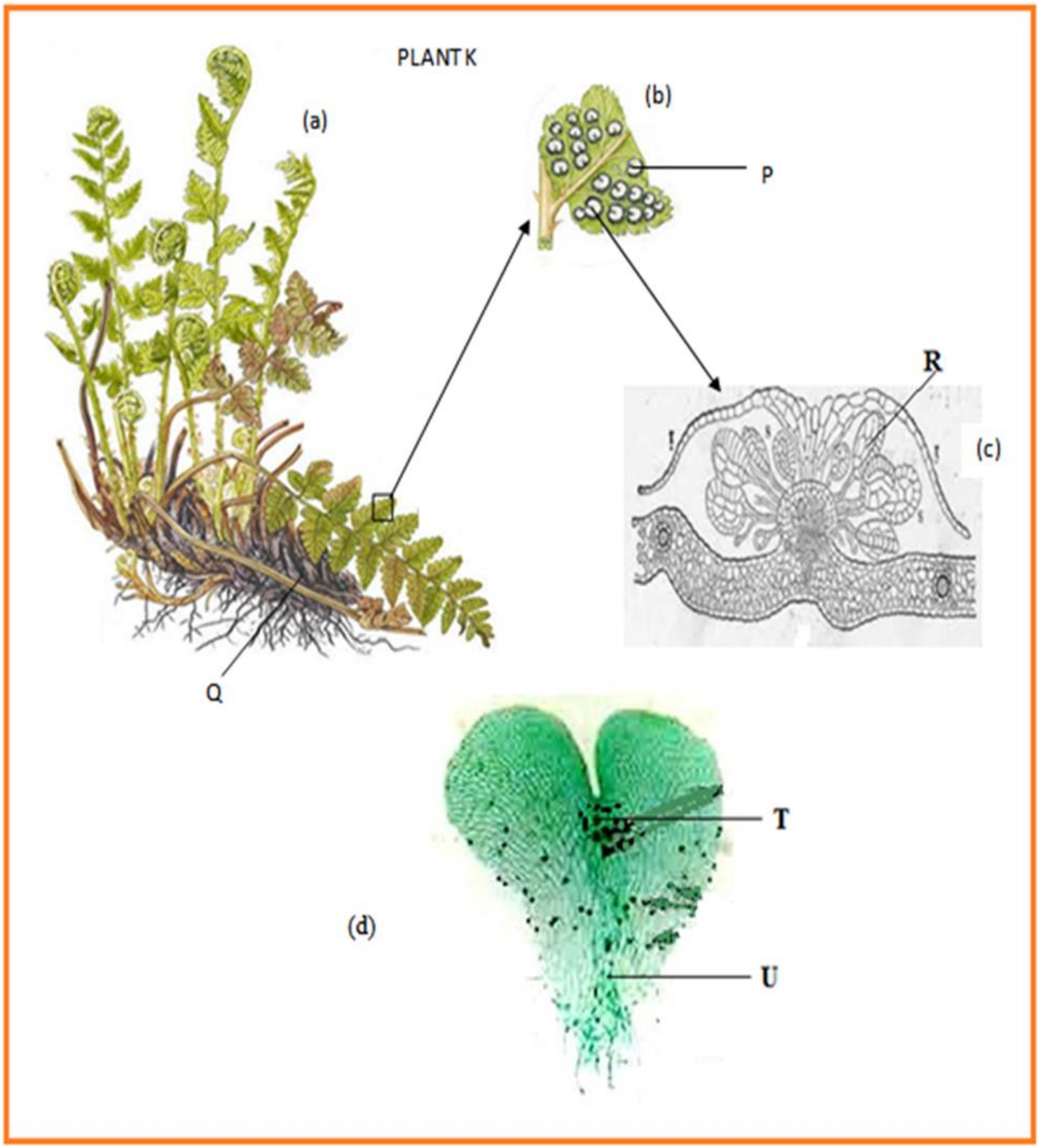
(ii) Account for the results in (d) (i) above**.** **(2marks)**

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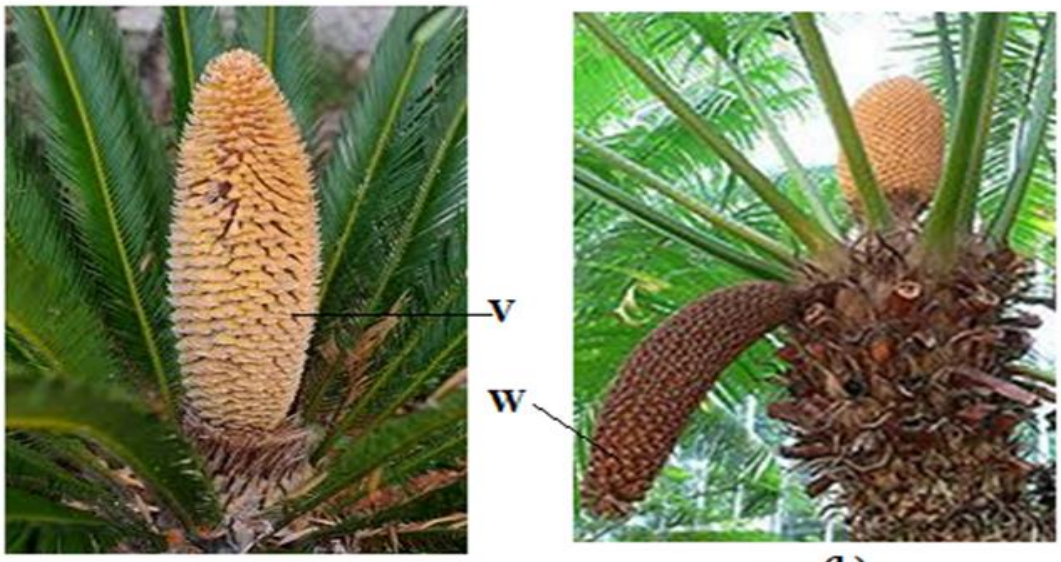
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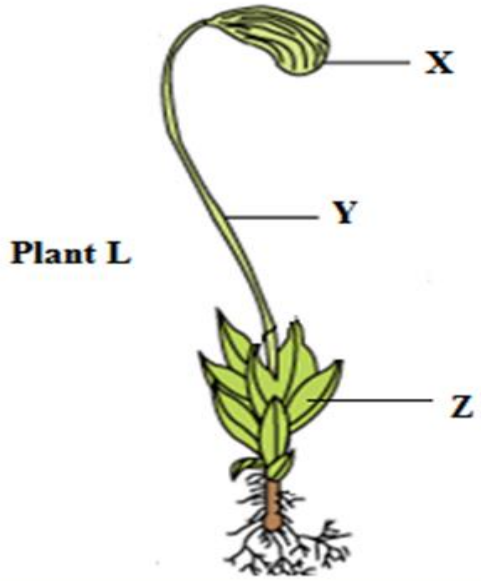
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2.The diagrams below represents plants , K,L and M. study them carefully and answer the questions that follow



Plant M





a) Giving a reason in each case, classify each plant into its division.

Plant K **(2mks)**

Division.....

Reason

.....

.....

Plant L **(2mks)**

Division.....

Reason

.....

.....

b) Using observable features only, state the subdivision of plant M **(2marks)**

Sub-division.....

Reason

.....

.....

.....

c) Identify the parts labeled P,U,V & Y(4mks)

P

.....

U

.....

V

.....

Y

.....

d) State the functions of part T and state why (d) grows in wet areas. **(2 marks)**

Function of T

.....

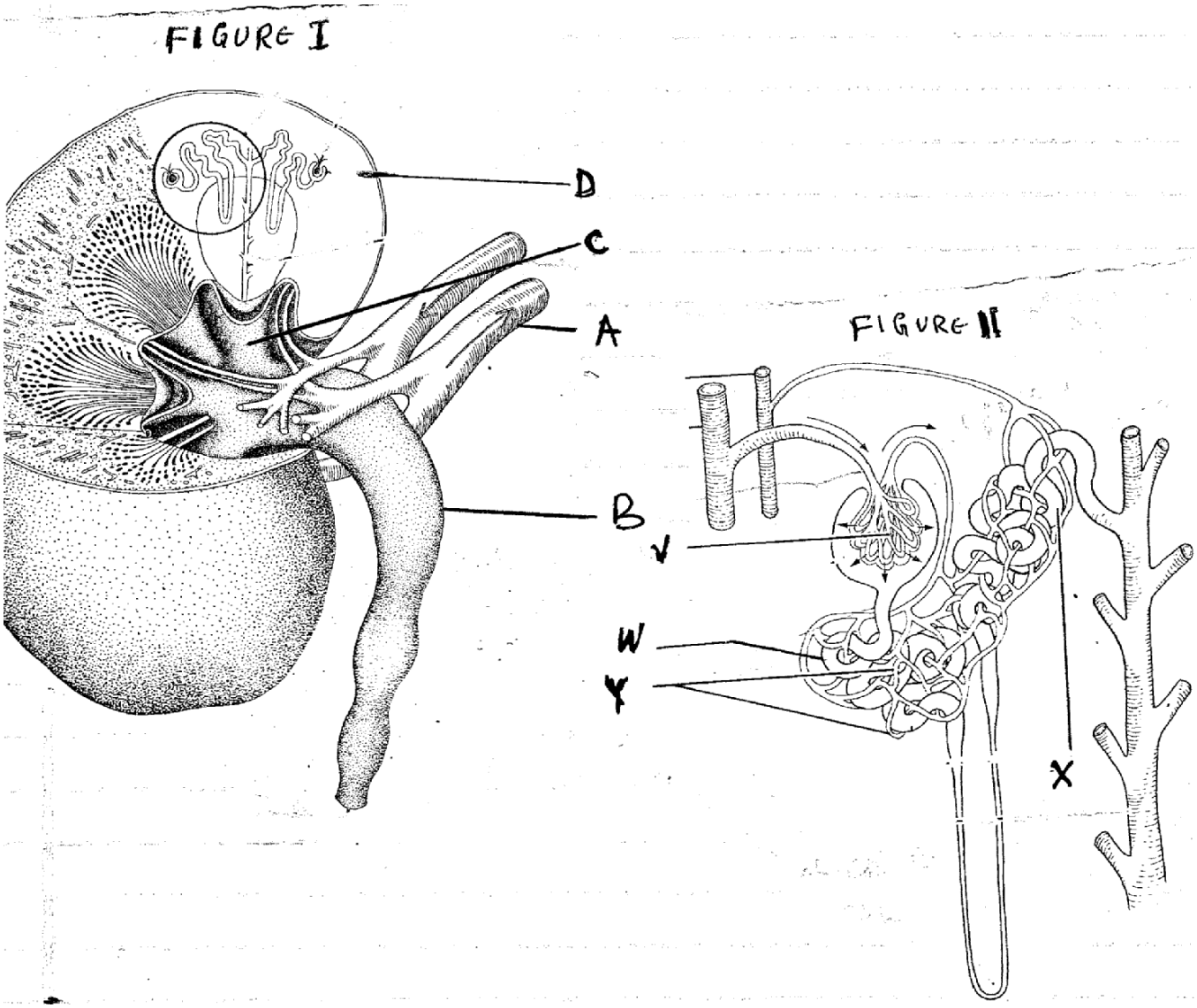
.....

Reason why (d) grows in wet areas

……

……

3.Below are diagrams of part of the urinary system. Examine them.



i)Name the parts labeled A and B in figure 1 **(2mks)**

A……..

B……..

ii) Name the parts labeled V, W, X and Y in figure 11. **(4mks)**

V…….

W……

X……

Y……

b) State two adaptations of part labeled W to its function **(2mks)**

……

……

……

c)In the diagram, name the part where;

i)Counter current flow occurs **(1mks)**

……

……

ii) Reabsorption of water occurs **(1mks)**

……

……

d)Explain what would happen to the process of urine formation in absence of anti-duiretic hormone (ADH) **(3mks)**

……

……

……

……

……

KCSE 2024 REPLICA EXAMS

BIOLOGY PRACTICAL

PREDICTION 2 PRACTICAL

Confidential

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INSTRUCTIONS

Each Candidate will require the following:-

The photographs should be coloured

- ***a)*** *Specimen Q Ripe banana*
- ***b)*** *Iodine Solution*
- ***c)*** *Visking tubing*
- ***d)*** *100ml beaker*
- ***e)*** *Thread*
- ***f)*** *Scapel*

KCSE 2024 REPLICA EXAMS

BIOLOGY

PREDICTION 2 PRACTICAL

TIME: 1 ¾ HOURS

NAME…… INDEX NO……..…

SCHOOL…….. SIGN…….

DATE……....

INSTRUCTIONS TO CANDIDATES

a) *Write your name, admission number, date, and signature and school name in the spaces provided.*

b) *Answer **ALL** the questions in the spaces provided in the question paper*

c) *You are NOT allowed to start working with the apparatus for the first 15 minutes of the **1¾ hours** allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus that you may need.*

d) *Additional pages must **not** be inserted*

FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. You are provided with a specimen labelled **Q**, use it to answer the questions that follow.

(a) (i) Sketch a drawing and label the specimen on the space provided. **(2 marks)**

(iii) Make a transverse section of the specimen and label. **(3 marks)**

(b) What type of fruit is specimen Q? **(1 mark)**

……

……

c) Slice off about 2cm^{2}cube from the specimen. Peel it. Tie one end of the 8cm LONG transparent visking tubing provided. Place the banana cube and tie the other end to ENSURE THERE IS NO LEAKAGE AND BOTH ENDS OF THE TUBING. Rinse the outside of the tubing with water. Immerse the tubing with its content in 100ml beaker containing iodine solution. Allow standing for 20 minutes.

(i) Record your observations in the table below. **(4 marks)**

	Contents inside tubing	Iodine solution Outside tubing
Before the experiment		
After the experiment		

(ii) What was the physiological activity under test? **(1 mark)**

……

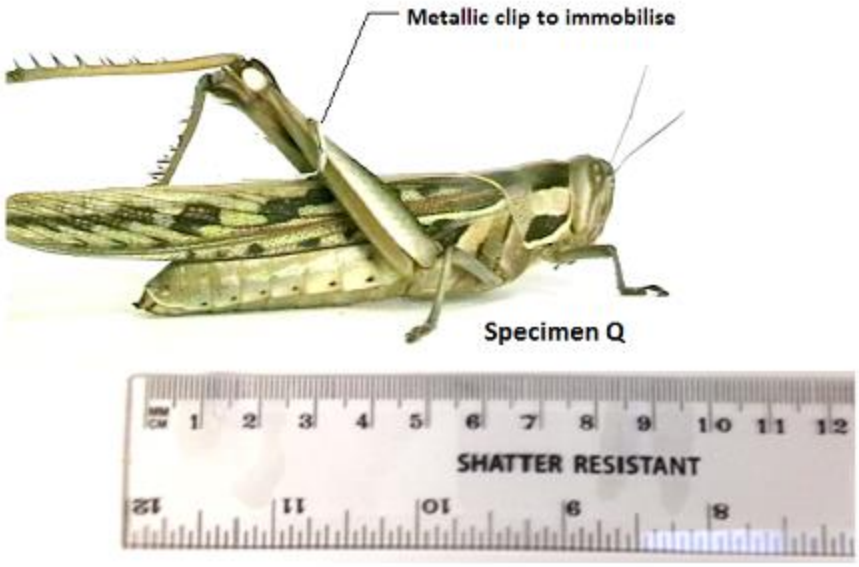
(ii) Account for the results obtained in c (i) above. **(3 marks)**

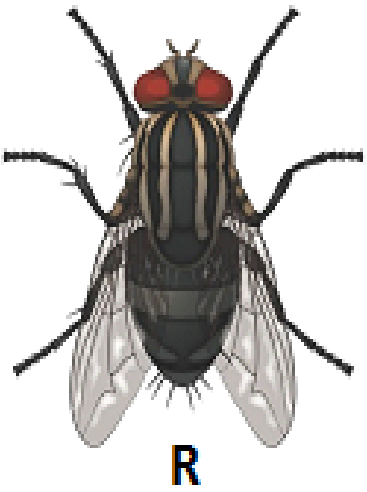
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……

……

2. You are provided with specimen **Q, R S T** and **U**. Study them to answer the questions below.





.


S


T


U

(a) Work the actual length of specimen **T,** given that the shatter resistant ruler measures **Q** from tip of mouth to tip of abdomen. **(3 marks)**

……

……

……

……

(b) Aboy immobilised specimen **Q** and attempted to drawn and suffocate it in water by placing its head in water. Using observable features, explain why he couldn't succeed. **(2 marks)**

……

……

……

(c) Use the features in order given below and construct a dichotomous key that can be used to identify the specimen above.

Wings, long or short hind limbs, number of legs, antenna. **(8 marks)**

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……

……

(d) State three ways in which specimen **Q** is adapted to evade its predators in its ecological niche. **(3 marks)**

……

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……

……

3. You are provided with two photographs below of maize plant (*Zea mays*) taken from the school farm.Use them to answer the questions that follow.



photograph A



photograph B

(a) Classify the specimen into Division, Sub-division and Class where it belongs.

Division **(1 mark)**

……

Sub-division **(1 mark)**

……

Class **(1 mark)**

……

b) Give **one** reason why you classified it into sub- division above. **(1 mark)**

……

……

(i) What type of leaf arrangement is shown in photograph **A** above. **(1 mark)**

……

(ii) Giving reasons, give the **term** used to describe the above flower based on the agent of pollination. **(1 mark)**

……

……

Reasons **(2 marks)**

……

……

……

iii) On the photographs, label where the pollen grain produced and where stigma is likely to be found respectively. **(2 marks)**

iv) With respect to floral arrangement, what term is used to describe maize plant?**(1 mark)**

KCSE 2024 REPLICA EXAMS

BIOLOGY PRACTICAL

PREDICTION 3 PRACTICAL

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INSTRUCTIONS

Each Candidate will require the following:-

The photographs should be coloured

1. *Solid **Q***
2. *Solid **R***
3. *20ml distilled water*
4. *2 labels*
5. *6 test tubes in a rack*
6. *Specimen **Y***
7. *10ml measuring cylinder*

Each student to have access to the following reagents;

1. *Iodine solution*
2. *NaOH*
3. *1% $CuSO_2$*

Preparations

1. Solid **Q**, Wheat flour. Weigh 1g of wheat flour and label it Solid **Q**.
2. Solid **R**, Maize flour. Weigh 1g of maize flour and label it Solid **R**.
3. Specimen **Y** is a leaf of kales (Sukuma Wiki)

KCSE 2024 REPLICA EXAMS

BIOLOGY

PREDICTION 3 PRACTICAL

TIME: 1 ¾ HOURS

NAME…… INDEX NO……..…

SCHOOL…….. SIGN…….

DATE……....

INSTRUCTIONS TO CANDIDATES

a) *Write your name, admission number, date, and signature and school name in the spaces provided.*

b) *Answer **ALL** the questions in the spaces provided in the question paper*

c) *You are NOT allowed to start working with the apparatus for the first 15 minutes of the **1¾ hours** allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus that you may need.*

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FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. You are provided with solid **Q** and **R**. You are also provided with iodine solution, Sodium hydroxide solution and Copper (II) sulphate solution.

i. Dissolve all solid **Q** in $5cm^3$ of distilled water in a test tube to form a suspension. Label it as **Q**.

ii. Dissolve all solid **R** in $5cm^3$ of distilled water in a test tube to form a suspension. Label it as **R**.

a) Using the procedure outlined in the table below, carry out food tests on the substances **Q** and **R**, write the food, observation and conclusion. **(6 marks)**

Food	Procedure	Observation	Conclusion
	To 2ml of **Q** in a test tube, add 3 drops of iodine solution		
	To 2ml of **Q** in a test tube, add equal amounts of Sodium hydroxide solution then followed by a few drops of Copper (II) sulphate solution and shake		
	To 2ml of **R** in a test tube, add 3 drops of Iodine solution		
	To 2ml of **R** in a test tube, add equal amounts of Sodium hydroxide solution then followed by a few drops of Copper (II) sulphate solution and shake		

b) (i) which of the two substances should be included in a diet to protect a child from suffering Kwashiorkor. **(1 mark)**

……

……

(ii) Give a reason for your answer in b (i) above. **(1 mark)**

……

……

c) (i) Name **two** enzymes in the human body which digest the food substances found in Q. **(2 marks)**

……

……

(ii) State the organ from which each of the enzymes you have stated in c(i) above acts. **(2 marks)**

Enzyme**:**……Organ:…….....

Enzyme: ……Organ:……

2. You are provided with specimen **Y**.

(a) (i) Using external features only, identify the part of the plant. **(1 mark)**

……

(ii) Give **two** reasons for your answer in a(i) above. **(2 marks)**

……

……

……

(b) State the class to which the specimen belongs and give **one** reason for your answer. **(2 marks)**

Class:

……

Reason:

……

……

(c) (i) Explain **two** observable features in the specimen that adapt it to nutrition. **(2 marks)**

……

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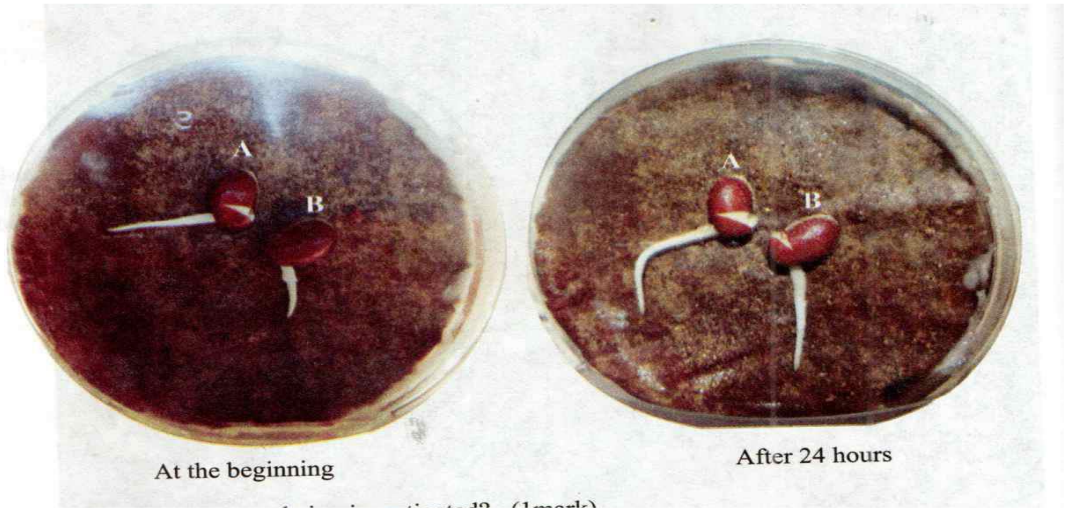
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(ii) State **two** features of the specimen that is only observable under a microscope that adapts it to gaseous exchange. **(2 marks)**

……

……

3. (a) The photograph below shows an experiment that was set to investigate a certain process in been seedling.



(i) Identify the response being investigated. **(1 mark)**

……

(ii) Account for the observed results for the seedling A after 24 hours. **(4 marks)**

……

……

……

……

(iii) Explain why the root in the seedling B continued to grow straight downward. **(2 mks)**

……

……

……

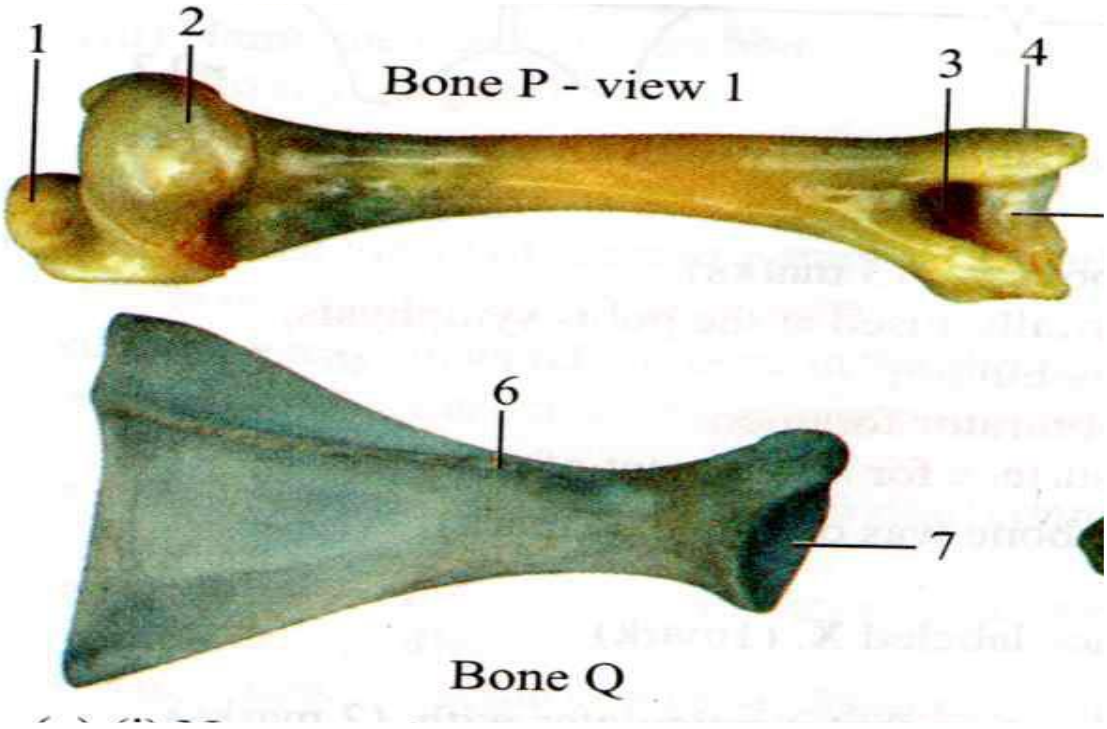
(iv) Explain the significance of the response stated in a(i) above to plant. **(2 marks)**

……

……

……

(b) You are provided with the photograph of mammalian bones P and Q obtained from the same animal.



(i) Name bone

P: ……..... **(1 mark)**

Q: ……..... **(1 mark)**

(ii) State the part of the body from which the bones were obtained.

P: ..... **(1 mark)**

Q: ..... **(1 mark)**

(iii) Which two of the labeled parts forms a ball and socket joint. **(1 mark)**

……

……

(iv) With reasons identify the type of joint formed by bone P at:

Distal end: ..... **(1 mark)**

Reason: .....**(1 mark)**

Anterior end: ..... **(1 mark)**

Reason: .....**(1 mark)**

(v) Name the other bone that articulates with bones P and Q and controls or limits movement in man. **(1 mark)**

……

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KCSE 2024 REPLICA EXAMS

BIOLOGY PRACTICAL

PREDICTION 4 PRACTICAL

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INSTRUCTIONS

Each Candidate will require the following:-

The photographs should be coloured

a) *Solution P- starch*

b) *Solution Q- egg white*

c) *Solution Z- water*

d) *Solution R- Diastase*

e) *Benedict's solution*

f) *Iodine solution*

g) *Visking tubing - 8cm*

h) *Thread*

i) *100ml beaker*

j) *5 test tubes*

k) *5 labels*

b) *D1-Blackjack*

c) *D2-Sonchus*

d) *D3-Jacaranda*

e) *D4-Mango*

KCSE 2024 REPLICA EXAMS

BIOLOGY

PREDICTION 4 PRACTICAL

TIME: 1 ¾ HOURS

NAME…… INDEX NO……..…

SCHOOL…….. SIGN…….

DATE……....

INSTRUCTIONS TO CANDIDATES

a) *Write your name, admission number, date, and signature and school name in the spaces provided.*

b) *Answer **ALL** the questions in the spaces provided in the question paper*

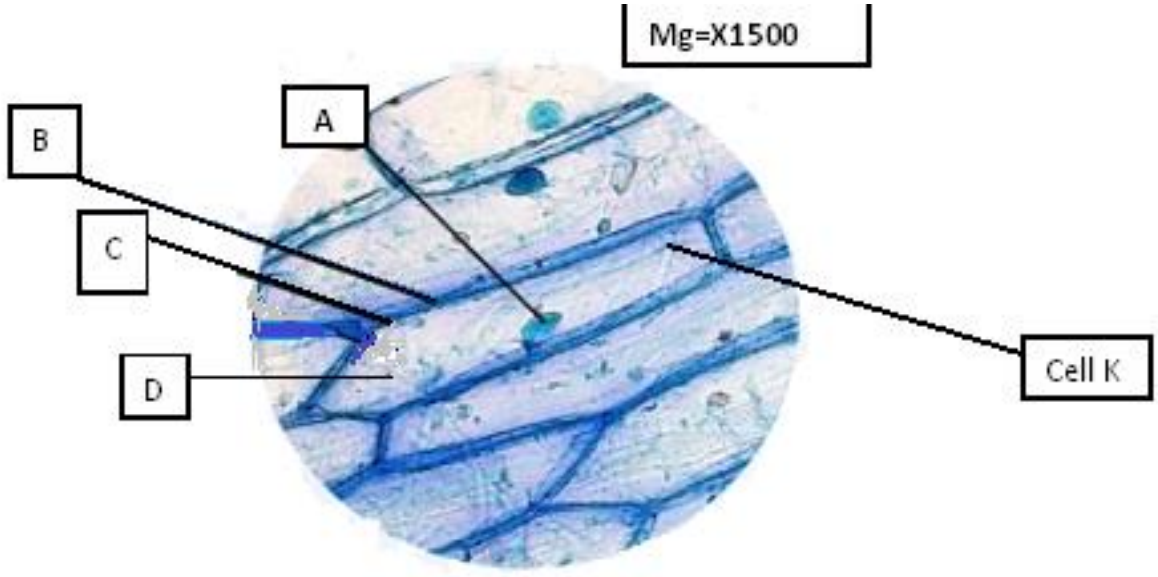
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FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. You are provided with the photomicrograph of an onion outer epidermis as seen under light microscope



a) On the photograph, name parts labelled A, C, and D **(3mark)**

A ……

C ……

D ……

a) Explain how the part **labelled B** is adapted to its function **(2marks)**

……

……

b) Calculate the actual size of the cell **marked K**, give your answer in micrometres **(2marks)**

c) The differences between the cells in the photograph and those obtained from an animal epithelial cells **(3marks)**

Onion epidermal cells	Animal epithelial cells

d) State the process that make the structures in the cell above appear more distinct**(1mk)**

……

e) In microscopic procedure in 1 (d) above name what was used to achieve the process **(1mark)**

……

……

2. The photographs below represent specimen labeled A, B, C and D

SPECIMEN A	**SPECIMEN B**
	

SPECIMEN C	SPECIMEN D
	

i) Name the type of placentation shown in specimen A and B **(2 marks)**

A……...…

B……..…….

ii) Identify the type of sections from which specimen **C** and D was obtained?

(2 marks)

C……...

D……..…….

iii) Classify the above specimen labeled D **(1mark)**

……

iv) You are provided with specimen labeled **D1, D2, D3** and **D4**. Examine them Draw and label specimen labeled **D2** **(3marks)**

v) Giving a reason and state the agent of dispersal of the specimen **(6marks)**

Specimen	**Agent of dispersal**	**Reason**
D1		
D3		
D4		

3. You are provided with the following. Solution **P**, **Q** and **Z**.

(a) (i) Put 2 cm^3 of solution **P** into two test tubes labeled **A** and **B**. Add iodine solution drops into test tube **A**. Observe and record. **(1 mark)**

……

……

(ii)To test tube **B**, add an equal amount of Benedict's solution. Heat to boil. Record your observation. **(1 mark)**

……

……

(iii) From the results in (a) (i) and (ii), identify solution **P**. **(1 mark)**

……

……

(iv). Put 2cm^3 of solution **Z** into a clean test tube labelled **C**. Add equal volume of Benedict's solution. Heat to boil. **(1 mark)**

……

……

(v) Open the visking tubing provided, Pour solution **P** into the visking tubing and add 1cm^3 of the solution **R**. Tie the visking tubing and ensure there is no leakage. Pour solution **Z** into a clean beaker till it is half full. Immerse visking tube in the solution **Z** in the beaker. Allow it to stand for 30 minutes. After 30 minutes, take 2cm^3 of solution **Z** from the beaker into a clean test tube labelled **D**. Add equal amount of Benedict's solution. Heat to boil. Record your observation. **(1 mark)**

……

……

(vi) Account for the observation made in (v) above. **(3 marks)**

……

……

……

……

(b) i) Pour 2 cm^3 of solution **Q** into a clean test tube. Observe and record the color of solution **Q.** **(1 mark)**

……

……

ii) Add 1 cm^3 of sodium hydroxide into test tube containing solution **Q**. Record your observation. **(1 mark)**

……

……

iii) Explain the results observed in (b)(ii) above. **(2 marks)**

……

……

……

iv). what is the identity of solution **R?** **(1 mark)**

……

……

v) State **one** factor that can affect the process demonstrated in 3a **(v)** above **(1 mark)**

……

……

KCSE 2024 REPLICA EXAMS

BIOLOGY PRACTICAL

PREDICTION 5 PRACTICAL

Confidential

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INSTRUCTIONS

Each Candidate will require the following:-

The photographs should be coloured

- ***a)*** *A freshly obtained pinnate/bipinnate leaf labeled specimen **K**.*
- ***b)*** *A piece of Irish potato tube (a medium sized potato to be shared between four students)*
- ***c)*** *A scalpel or other means of cutting*
- ***d)*** *5 labels*
- ***e)*** *One test tube*
- ***f)*** *A freshly obtained piece of couch grass having 2 to 3 internodes complete with roots and leaves labeled specimen **H**.*
- ***g)*** *Distilled water*
- ***h)*** *Stop watch or access to a wall clock*
- ***i)*** *About 15ml hydrogen peroxide*
- ***j)*** *10ml measuring cylinder*
- ***k)*** *Access to:*
- ***l)*** *Iodine solution supplied with a dropper calibrated in ml*
- ***m)*** *Dilute sodium hydroxide solution supplied with a dropper calibrated in ml*
- ***n)*** *Dilute hydrochloric acid supplied with a dropper calibrated in ml.*

KCSE 2024 REPLICA EXAMS

BIOLOGY

PREDICTION 5 PRACTICAL

TIME: 1 ¾ HOURS

NAME…… INDEX NO……..…

SCHOOL…….. SIGN…….

DATE……....

INSTRUCTIONS TO CANDIDATES

a) *Write your name, admission number, date, and signature and school name in the spaces provided.*

b) *Answer **ALL** the questions in the spaces provided in the question paper*

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d) *Additional pages must **not** be inserted*

FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. You are provided with a piece of Irish potato tuber, sodium hydroxide solution, a scalpel, a test tube, hydrochloric acid, iodine solution, hydrogen peroxide and a measuring cylinder.

(a) Using the scalpel provided, peel the potato and cut five equal cubes each $1cm^3$. Label them C1, C2, C3, C4 and C5.

(i) Cut C1 into many tiny pieces and put them into a test tube. Add 2ml of iodine solution. Observe and record your observations. **(1 mark)**

Observations**.....**

(ii) Allow the set-up to stand for 30 minutes. Observe and record your observations.

(1 mark)

Observations**.....**

(iii) Account for your observations in (i) and (ii) above. **(2 marks)**

.....

.....

.....

(b) (i) Put 5ml of hydrogen peroxide solution into the measuring cylinder provided. Put cube C2 into the measuring cylinder and record the volume of foam produced after two minutes.

Volume **.....** cm^3 **(1 mark)**

(ii) Empty the measuring cylinder and clean it. Cut C3 into smaller pieces and put them into a fresh 5ml hydrogen peroxide solution in the measuring cylinder. Record the volume of foam produced after two minutes. **(1 mark)**

Volume cm3

(iii) Account for the difference in volume of foam produced by cube C3 and cube C2 above. **(4 marks)**

.....

.....

.....

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……

(c) (i) Put 5ml hydrogen peroxide solution into a clean measuring cylinder. Add 1ml of the hydrochloric acid provided into the measuring cylinder and place cube C4 inside. Record your observations after two minutes. **(1 mark)**

……

……

(ii) Empty the measuring cylinder and clean it. Put 5ml hydrogen peroxide solution into the measuring cylinder and add 1ml of sodium hydroxide solution provided. Place cube C5 inside and record your observations after two minutes. **(1mark)**

……

……

(iii) Account for the difference in observations made in (c)(i) and (ii) above. **(4 marks)**

……

……

……

……

(d) Explain the importance of the enzyme responsible for the observations above in the tissues of living organisms. **(2 marks)**

……

……

2. You are provided with specimens **H** and **K**. Observe the specimens keenly.

(a) State two functions of specimen **K**. **(2 marks)**

……

……

(b) Name the division and class to which specimen **H** belongs.

Division……**(1 mark)**

Reason **(1 mark)**

……

……

Class ……**(1 mark)**

Reasons **(2 marks)**

……

……

(c) State **three** adaptations of specimen **K** for maximum photosynthesis. **(3marks)**

……

……

……

……

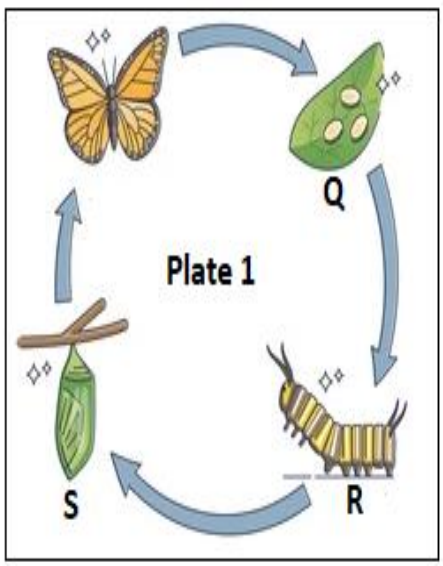
(d) Explain **two** ways in which specimen **H** is adapted for survival in its habitat.**(2 marks)**

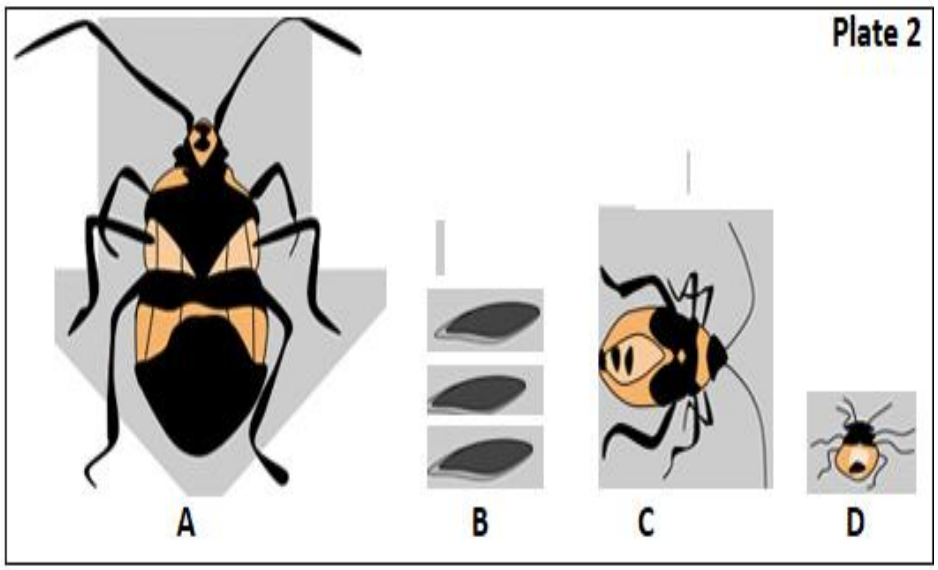
……

……

……

3. Study the photographs below representing certain processes in insects. Use them to answer the questions that follow.





(a) With reasons, name the type of the process represented by plates 1 and 2. (2 marks)

Plate	Name	Reason
1		
2		

(b) Name stages Q, R and **D.** **(3 marks)**

Q ……

R ……

D ……..

(c) Give an advantage of the process in plate 1 over the process in plate 2. **(1 mark)**

……

(d) Arrange stages A, B, C and D in their correct sequence. **(1 mark)**

……

……

(e) State **two** differences in the biological activities between the developmental sages R and S. **(2 marks**)

……

……

……

(f) Insects are the most populous and widespread in phylum Arthropoda. Give a reason to explain this observation. **(1 mark)**

……

……

KCSE 2024 REPLICA EXAMS

BIOLOGY PRACTICAL

PREDICTION 6 PRACTICAL

Confidential

The information contained in this **KCSE prediction paper** is to enable the head of the school and the teacher in charge of Biology to make adequate preparations for the 231/3 Biology Practical examination.

No one else should have access to this information either directly or indirectly.

INSTRUCTIONS

Each Candidate will require the following:-

The photographs should be coloured

*(1) Specimen **K** (Orange fruit)*

*(2) About **3cm^3** of substance **B** (olive oil)*

*(3) About **3cm^3** of liquid **C** (fresh cow milk)*

*(4) About **2cm^3** of **0.01%** DCPIP (supplied with a dropper)*

(5) About 2cm^3 of Iodine solution

*(6) About **2cm^3** **$NaHC0_3$** solution (supplied with a dropper)*

*(7) **6** test tubes in a test tube rack*

(8) Distilled water in a wash bottle

(9) Scalpel

*(10) **Two** 10ml measuring cylinder*

*(11) **One** 100ml beaker*

*(12) **2** Labels*

(13) Two droppers

KCSE 2024 REPLICA EXAMS

BIOLOGY

PREDICTION 6 PRACTICAL

TIME: 1 ¾ HOURS

NAME…… INDEX NO……..…

SCHOOL…….. SIGN…….

DATE……....

INSTRUCTIONS TO CANDIDATES

a) *Write your name, admission number, date, and signature and school name in the spaces provided.*

b) *Answer **ALL** the questions in the spaces provided in the question paper*

c) *You are NOT allowed to start working with the apparatus for the first 15 minutes of the **1¾ hours** allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus that you may need.*

d) *Additional pages must **not** be inserted*

FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. You are provided with **Specimen K** .Carefully cut a transverse section through specimen **K** using a scalpel provided.

(a) (i) By observing one of the two halves of specimen **K**, Give **two** reasons to **prove** that specimen **K** has **axile** placentation **(2mks)**

……

……

……

(ii) Squeeze some juice from **specimen K** into 100ml beaker provided and label it as **juice K.** using a portion of **juice K**, carry out the food test using the reagents provided and complete the table below. (**NB preserve the remaining portion of juice K for use in question 2.)** **(8mks**)

Food substance	Procedure	Observation	conclusion

(iii) Name the **deficiency** disease that results from **lack** of the food substance **present** in juice **K.** **(1mk)**

……

(iv) Highlight **two** symptoms of the disease named in **(a) (iii)** above **(2mks)**

……

……

2. Put **2cm^3** of liquid labelled **C** into a test tube. Draw some of the juice from specimen **K** into a dropper. Add 4 drops of the juice into the test tube with solution ***C*** and shake.

(a) (i) State your observation. **(1mk)**

……

……

(ii) State the part of the human body where the process demonstrated above occurs and the enzyme that carries out the process.

Part of body……..**(1mk)**

Enzyme…… **(1mk)**

(iii) Which gland produces the enzyme stated in (a)(ii) above? **(1mk)**

……

(b) Take a small amount of substance **B** provided and add to it **2cm^3** of sodium hydrogen carbonate solution.

(i) State your observations **(1mk)**

……..

(ii) Which **process** in the body is illustrated above? **(1mk)**

……..

(iii) State the part of **the body** where the above process takes place **(1mk)**

……

(iv) State two functions of substance **B** in the body **(2mks**

……

……

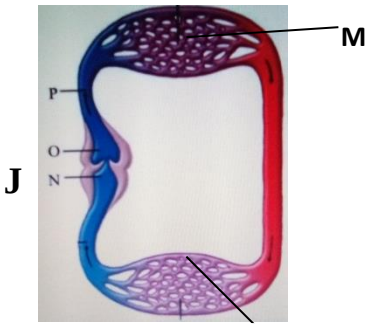
(v) Name **two** diseases of the circulatory system caused by **excess** cholesterol in food.

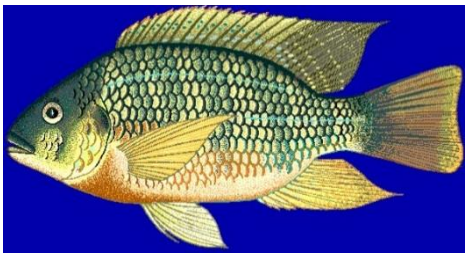
(2mks)

……

……

3. (A) photograph **J** shows the circulatory system of organism represented by photograph **G**.





(i) Giving **two** reasons to your answer name the **class** to which specimen **G** belongs.

Class……..…….. **(1mk)**

Reasons…… **(2mk)**

……

……

(ii) Name the part labelled:

M…….……**(1mk)**

N……..…….…. **(1mk)**

O ……..……..…. **(1mk)**

(iii) Giving **one** reason to your answer state the type of **closed** circulatory system shown by photograph **J**

……

……

Type of circulatory system……**(1mk)**

Reason……**(1mk)**

(iv) State two features of specimen **G** that enhances its **streamlined** shape **(2mks)**

……

……

(B) Below are photographs of **Venus flytrap** (an insectivorous plant). Study them and answer the questions that follow.

A B C



(i) Name one major nutrient that is **deficient** in the soil where the above plant grows.**(1mk)**

……

(ii) Name the type of response shown by plate **C** **(1mk)**

……

(iii) Describe how the above plant **trap** the insect **(4mks)**

……

……

……

……

……

KCSE 2024 REPLICA EXAMS

BIOLOGY PRACTICAL

PREDICTION 7 PRACTICAL

Confidential

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INSTRUCTIONS

Each Candidate will require the following:-

The photographs should be coloured

1. *Freshly plucked kale leaf with a petiole at least 10cm long.*
2. *50ml of 2M sodium chloride solution in beaker labeled **solution A**.*
3. *50 ml distilled water in a beaker labeled **solution B.***
4. *2 petri dishes.*
5. *Scapel.*
6. *Hand lens.*
7. *Ruler.*
8. *Bone **W**, which is **Thoracic vertebrae.***
9. *Bone **Q**, which is **Rib.***

KCSE 2024 REPLICA EXAMS

BIOLOGY

PREDICTION 7 PRACTICAL

TIME: 1 ¾ HOURS

NAME…… INDEX NO……..…

SCHOOL…….. SIGN…….

DATE……....

INSTRUCTIONS TO CANDIDATES

a) *Write your name, admission number, date, and signature and school name in the spaces provided.*

b) *Answer **ALL** the questions in the spaces provided in the question paper*

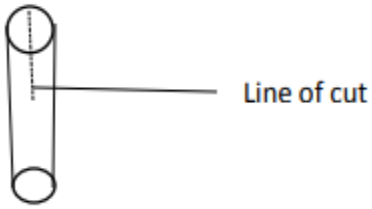
c) *You are NOT allowed to start working with the apparatus for the first 15 minutes of the **1¾ hours** allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus that you may need.*

d) *Additional pages must **not** be inserted*

FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1.You are provided with a specimen labelled K,Using the scapel cut 8 cm of the petiole from the side close to the lamina.cut 2 pieces each measuring 4cm. using a scapel cut a slit halfway through the middle of each piece as shown in the diagram below.



Place one piece in solution labelled A and the other in solution labelled B.Allow the set up to stand for 30 minutes.

a) After 30 minutes remove the pieces and press each gently between the fingers.

(i). Record your observations **(2mks)**

solution A

……

……

Solution B

……

……

(ii) Account for the observations .made in the petiole dipped in solution A. **(3mks)**

……

……

……

……

b) Explain the role of the physiological process identified above in plant nutrition **(2mks)**

……

……

……

c) State the **sub-division** to which the plant from which specimen **K** was obtained belongs. **(2mks)**

……

d) State **TWO** observable features that adapt specimen K for **gaseous exchange** **(2mks)**

……

……

……

e) Cut a transverse section of the petiole , using a hand lens observe the arrangement of the vascular bundles and make a diagram of the same. **(3mks)**

2. You are provided with two bones labelled .Examine them and answer the questions below

a) Giving reasons, identify bones **W and Q** **(4mks)**

(i) Identity of **bone W**

……

Reasons

……

……

Identity of **bone Q**

……

Reasons

……

……

b) State TWO adaptations of specimen **Q** **(2mks)**

……

……

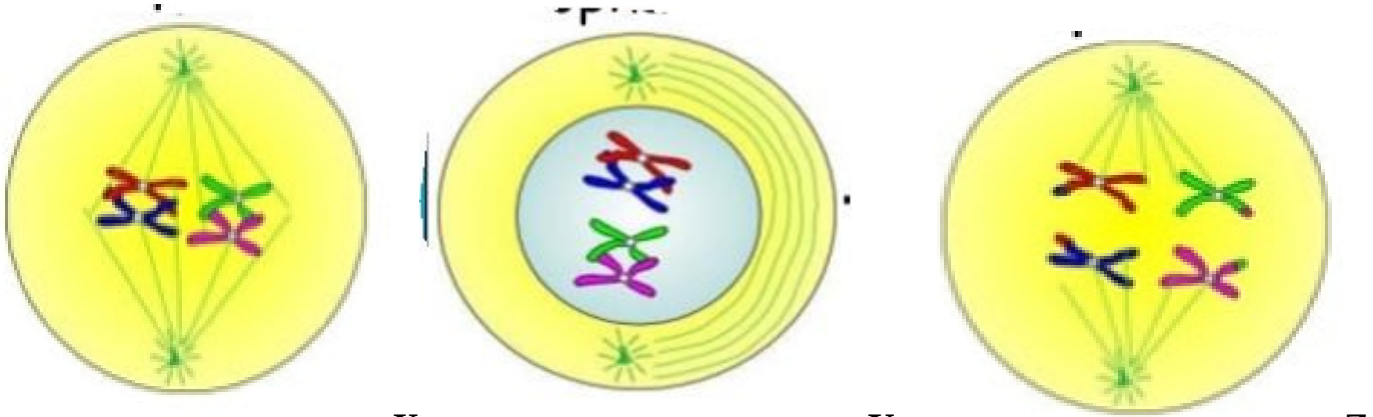
(c) Bone Q and Bone W articulate , draw a diagram showing how the two bones articulate. **(5mks)**

(d) State the significance of the **articulation** of the TWO bones. **(2mks)**

……

……

3.The photograph below show stages in cell division.



X **Y** **Z**

a)Name the stages represented by the cells labelled X, Y and Z **(3mks)**

X……

Y……

Z……

b) State the significance of the above cell division to an organism. **(3mks)**

……

……

……

……

c) Name **TWO** regions in higher plants where the above process occur **(2mks)**

……

……

d) Explain the events that take place in the phase after phase Y. **(3mks)**

……

……

……

……

e) State the importance of the above in a member of a species **(2mk)**

……

……

KCSE 2024 REPLICA EXAMS

BIOLOGY PRACTICAL

PREDICTION 8 PRACTICAL

Confidential

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INSTRUCTIONS

Each Candidate will require the following:-

The photographs should be coloured

- ***a)*** *Specimen A-potato tissue-half @ student*
- ***b)*** *Specimen K-bread mould-growth duration-substrate-bread/ugali-5 days*
- ***c)*** *Hydrogen peroxide- 3 ml@ student*
- ***d)*** *Distilled water -4ml @ student*
- ***e)*** *Sodium hydroxide- 4ml @ student*
- ***f)*** *Dilute hydrochloric acid -4 ml @ student*
- ***g)*** *10 ml measuring cylinder -1@ student*
- ***h)*** *Dropper*
- ***i)*** *Hand lens-shared*
- ***j)*** *Knife/scalpel-shared*
- ***k)*** *Mortar and pestle*
- ***l)*** *Spatula*
- ***m)*** *Ruler*
- ***n)*** *100 ml beaker*
- ***o)*** *Source of heat*
- ***p)*** *Solution B-Starch solution*
- ***q)*** *Solution C1-UNBOILED amylase-4ml@ student.*
- ***r)*** *Solution C2-BOILED amylase*

s) *Benedict's solution.*
t) *5 test tubes@ student*
u) *5 labels @student*
v) *Stop watch*
w) *Iodine solution-shared*
x) *Thermometer.*

KCSE 2024 REPLICA EXAMS

BIOLOGY

PREDICTION 8 PRACTICAL

TIME: 1 ¾ HOURS

NAME…… INDEX NO……..…

SCHOOL…….. SIGN…….

DATE……....

INSTRUCTIONS TO CANDIDATES

a) *Write your name, admission number, date, and signature and school name in the spaces provided.*

b) *Answer **ALL** the questions in the spaces provided in the question paper*

c) *You are NOT allowed to start working with the apparatus for the first 15 minutes of the **1¾ hours** allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus that you may need.*

d) *Additional pages must **not** be inserted*

FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. You are provided with specimen labeled A. Obtain a cube measuring 1cm by 1cm from the specimen.

(a) Crush the cube using mortar and pestle, place the crushed parts in measuring cylinder, add 2 ml of hydrogen peroxide and quickly determine the volume of foam after 20 seconds and fill the table below. **(1 mark)**

Specimen	Volume of foam
Crushed cube A	

Explain why the reaction in (a) above occurs in living cells. **(2 marks)**

……

……

……

(b) You are provided with a solution labeled B, unboiled C1 and boiled C2. Place 2ml of the solution B into two test tubes and carry out a food test using the reagents provided. Record your observation in the table below. **(2 marks)**

FOOD SUBSTANCE	PROCEDURE	OBSERVATION	CONCLUSION

Place 2ml of solution B into four test tubes labeled F, G, H and K. Carry out the following steps.

(i) To test tube labeled F and its contents add 3ml solution C1 and 3 ml distilled water.

(ii) To test tube labeled G and its contents, add 3ml solution C1 and 3 ml dilute hydrochloric acid.

(iii) To test tube labeled H and its contents, add 3 ml solution C 1 and 3 ml sodium hydroxide solution.

(iv) To test tube labeled K and its contents, add 3 ml solution C2.

(v) Place the test tubes in a water bath at 37 ^{0}C for 20 minutes.

(vi) Carry out a Benedict's test and fill the table below. **(4 marks)**

Test tube	**PROCEDURE**	**OBSERVATION**	**CONCLUSION**
F			
G			
H			
K			

(a) Account for the observation in:

(i) Test tube G. **(2 marks)**

……

……

……

(ii) Test tube H. **(1 mark)**

……

……

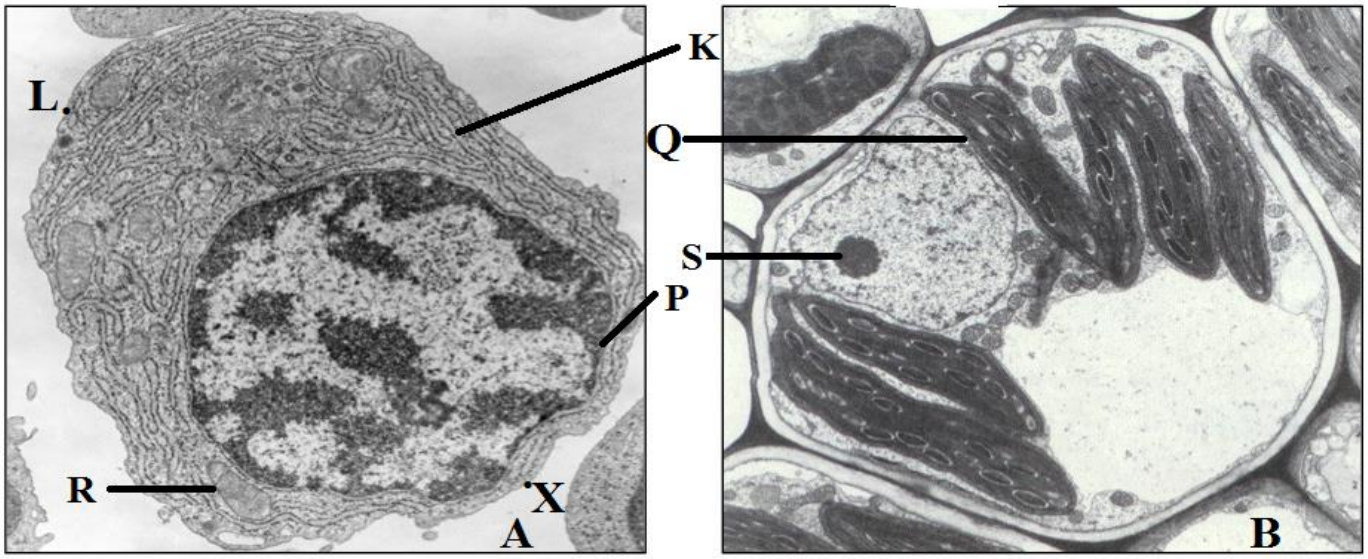
(iii) Test tube K. **(2 marks)**

……

……

……

2. Use the illustration below to answer questions



(a) Identify the organism from which the cell labelled B was obtained from while giving a reason.

(ii) B. **(1 mark)**

……

……

Reason. **(1 mark)**

……

……

(b) Give the functions of the parts labeled:

(i) R. **(1 mark)**

……

……

(ii) S. **(1 mark)**

……

……

(b) Name the parts labeled:

(iii) Q. **(1 mark)**

……

(iii) P. **(1 mark)**

……

(iv) K. **(1 mark)**

……

(d) Calculate the actual length of cell A in micrometers if its magnification Is X1000 000.Use the points marked L and X. **(3 marks)**

……

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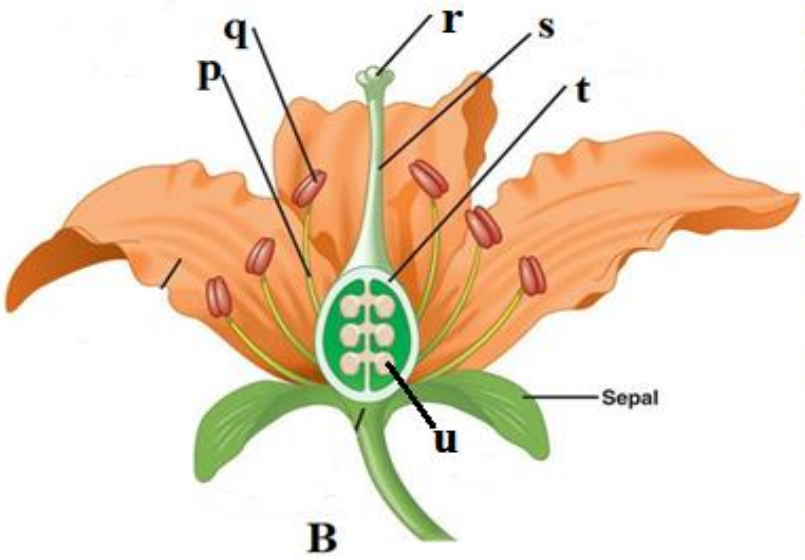
(e) Explain why cell A and B are believed to have a common ancestry. **(2 marks)**

……

……

……

3. Use the photographs below to answer questions





(a) (i) Name the type of flowers shown in A1 and A2.

(i) A1. **(1 mark)**

……

(ii) A2 **(1 mark)**

……

(ii) Describe the feature in flowering plants depicted in (a)(i) above. **(1 mark)**

……

……

(iii) Explain how flower labeled A1 is modified for pollination. **1 mark)**

……

……

(b) Give the functions of the parts labeled p, r and s in specimen labeled B.

(i) p. **(1 mark)**

……

(ii) r. **(1 mark)**

……

(iii) s. **(1 mark)**

……

……

(c) State the structural descriptions of flower B. **(2marks)**

……

……

……

(d) Explain what would happen to the following parts after pollination.

(ii) t. **(1 mark)**

……

……

(iii) u. **(1 mark)**

……

……

(e) You are provided with a specimen labeled K in a petri dish, observe the specimen using a hand lens and answer questions that follow.

(i) Make well labeled diagram to show the reproductive structure of the organism.**(3 mks)**

(ii) Give the type of asexual reproduction exhibited by the organism. **(1 mark)**

……

……

KCSE 2024 REPLICA EXAMS

BIOLOGY PRACTICAL

PREDICTION 9 PRACTICAL

Confidential

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INSTRUCTIONS

Each Candidate will require the following:-

The photographs should be coloured

- ***a)*** *80 ml of iodine solution supplied with a dropper*
- ***b)*** *8 cm visking tubing.*
- ***c)*** *2 pieces of strong cotton thread 20 cm long.*
- ***d)*** *100 ml beaker (glass or plastic)*
- ***e)*** *Means of timing. A wall clock will be appropriate.*
- ***f)*** *10 ml measuring cylinder.*
- ***g)*** *100 ml water is 250 ml beaker.*
- ***h)*** *10 ml of 10 % Starch solution labelled X.*
- ***i)*** *10 ml of Benedict's solution supplied with a dropper*
- ***j)*** *2 Test tubes*
- ***k)*** *Hand lens*

Specimen J: *Hibiscus rosaninensis*

K: *Bougainvillea glabra*

L: *Jacaranda mimosifolia*

M: *Zea mays*

N: *Lantana camara*

Preparation of 10 % Starch solution

Dissolve 10 gm of starch powder in 100 ml of distilled water.

KCSE 2024 REPLICA EXAMS

BIOLOGY

PREDICTION 9 PRACTICAL

TIME: 1 ¾ HOURS

NAME…… INDEX NO……..…

SCHOOL…….. SIGN…….

DATE……....

INSTRUCTIONS TO CANDIDATES

a) *Write your name, admission number, date, and signature and school name in the spaces provided.*

b) *Answer **ALL** the questions in the spaces provided in the question paper*

c) *You are NOT allowed to start working with the apparatus for the first 15 minutes of the **1¾ hours** allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus that you may need.*

d) *Additional pages must **not** be inserted*

FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. You are provided with iodine solution, Benedict's solution, visking tubing, test tubes, a beaker and a solution labelled X (shake thoroughly before use)

a) Using the reagents provided test the identity of solution labeled X**.** **(6 mrks)**

Foot test	Procedure	Observation	Conclusion

Tie one end of the visking tubing provided with a thread tightly. Measure 5ml of solution X. Pour 5ml of solution X into the visking tubing. Tie the other end of the tubing tightly. Ensure there is no leakage. Rinse the outside of the tubing with distilled water and immerse it with its contents in a beaker containing iodine solution. Allow it to stand for 20 minutes.

b (i) Record your observation at the beginning and end of the experiment. Record your results in the table below. **(4 mrks)**

Experimental set up	Solution X inside the visking tubing	Iodine solution outside the visking tubing
Beginning of experiment		
End of experiment		

(ii) Suggest the nature of visking tubing. **(1 mrk)**

……

……

(iii) Account for the results obtained in a (i) above. **(4 mrks)**

……

……

……

……

……

……

c) Which physiological process was being investigated in this experiment? **(1 mrk)**

……

2. You are provided with specimens labelled:

J: *Hibiscus rosaninensis*
K: *Bougainvillea glabra*
L: *Jacaranda mimosifolia*
M: *Zea mays*
N: *Lantana camara*

a) Using the characteristics given below and in the order in which they occur, construct a dichotomous key to identify the specimens**.** **(8mks)**

Characteristics

1. Type of leaf
2. Leaf venation
3. Leaf margin
4. Texture of leaf lam

b i) Identify the likely habitat of the plant from which specimen labelled N was obtained from. **(1 mrk)**

……

ii) Give a reason for your answer in bi) above. **(1 mrk)**

……

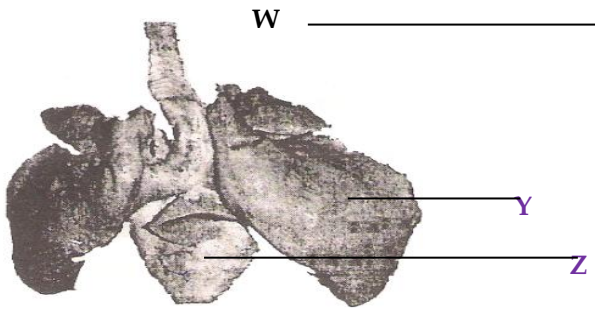
c i) Name the class of the plant from which specimen M belong. **(1 mrk)**

……

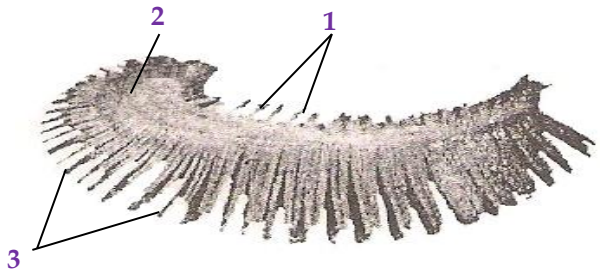
ii) Give a reason for your answer in c i) above**.** **(1 mrk)**

……

3. Below are photographs labelled J and K of organs obtained from different animals. Examine them and answer the following questions.



Photograph J



Photograph K

(a) Identify the organs labelled: **(2 mrks)**

X:

……

Y:

……

(b i) State the function performed by the above named organs. **(2 mrks)**

Organ **X:**

……

……

Organ **Y:**

……

……

ii) State **three** adaptations of organ labelled Y to its function. **(3mrks)**

……

……

……

……

……

……

c i) Identify the parts labelled **1, 2** and **3** in photograph K**.** **(3 mrks)**

1:

2:

3:

ii) Using observable features, state how the parts labelled **1** and **3** you identified in (i) above are adapted to their functions. **(2 mrks)**

……

……

……

KCSE 2024 REPLICA EXAMS

BIOLOGY PRACTICAL

PREDICTION 10 PRACTICAL

Confidential

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INSTRUCTIONS

Each Candidate will require the following:-

The photographs should be coloured

1. *About 10ml of substance L.*
2. *4 clean test tubes on a rack.*
3. *A means of heating*
4. *Test tube holder.*
5. *A scalpel.*
6. *A house fly labeled specimen M.*
7. *A dry bean seed labeled S_1.*
8. *A bean seedling labeled S_2.*
9. *A maize seedling labeled S_3.*
10. *1% copper (II) sulphate solution.*
11. *10% sodium hydroxide solution.*
12. *Benedict's solution.*
13. *Iodine solution.*

Note:

i. *To make substance L,mix egg albumen and starch.*

ii. *Specimen S_2 and S_3 should be ready 1 week before the exams and must have the seeds intact.*

KCSE 2024 REPLICA EXAMS

BIOLOGY

PREDICTION 10 PRACTICAL

TIME: 1 ¾ HOURS

NAME…… INDEX NO……..…

SCHOOL…….. SIGN…….

DATE……....

INSTRUCTIONS TO CANDIDATES

a) *Write your name, admission number, date, and signature and school name in the spaces provided.*

b) *Answer **ALL** the questions in the spaces provided in the question paper*

c) *You are NOT allowed to start working with the apparatus for the first 15 minutes of the **1¾ hours** allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus that you may need.*

d) *Additional pages must **not** be inserted*

FOR EXAMINERS USE ONLY

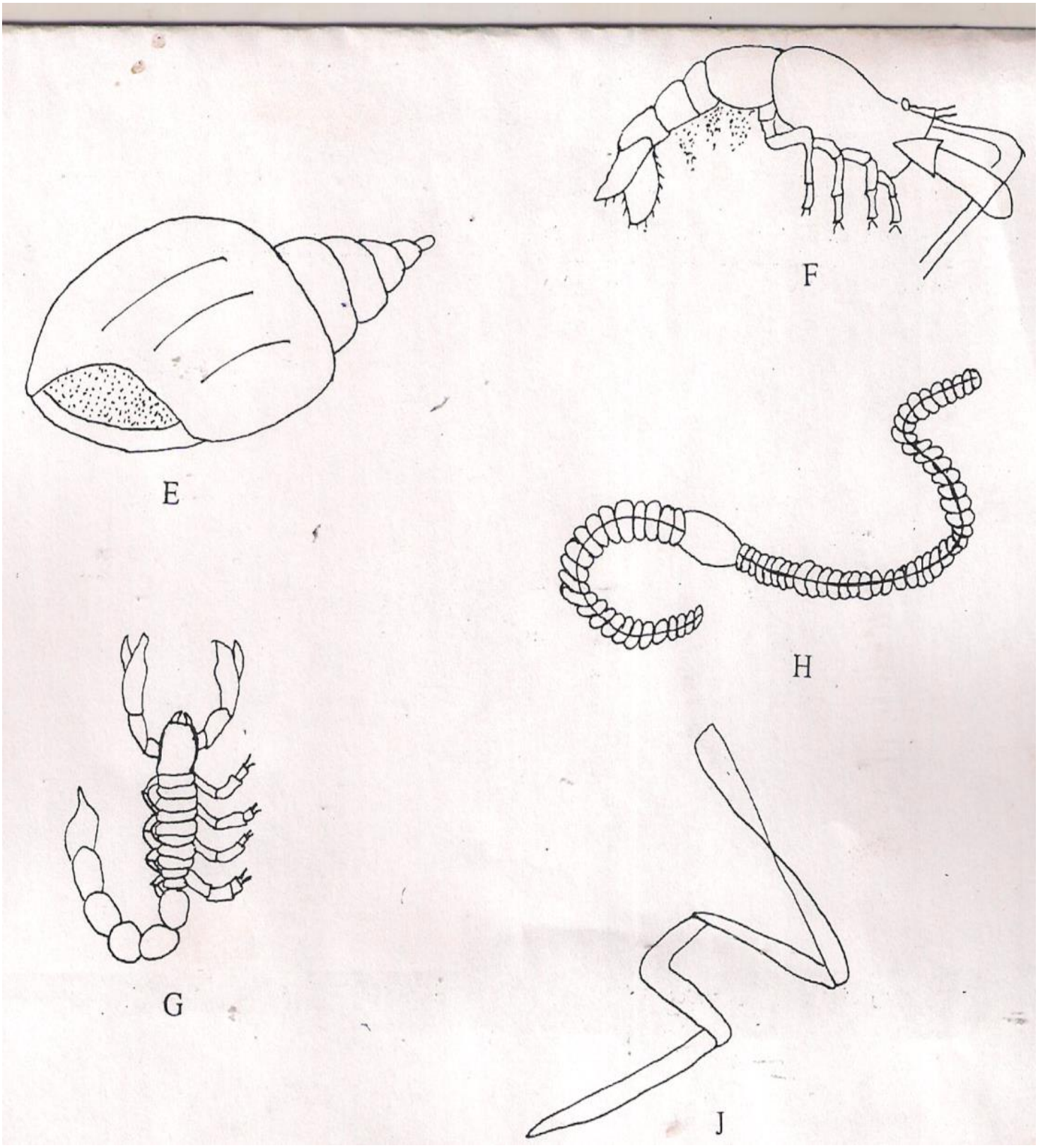
SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

Answer all the questions in the spaces provided.

1. You are provided with substance L.Carry out food tests on the substance using the reagents provided .Record your procedure , observations and conclusions in the table below**.(9mks)**

Food substance	**Procedure**	**Observation**	**Conclusions**

During a visit to a museum, students were shown ten specimens of organisms on display. The teacher provided a dichotomous key (shown in a separate page) to enable them to place each species on display into its taxonomic group. Five of the specimens that were on display are shown in the diagrams provided.



Dichotomous Key.

1.(a) Animal with a flattened body….. ……..go to 9.

(b) Animal without a flattened body……. go to 2.

2.(a) Animal with body in a shell …….Mollusca.

(b) Animal with body in shell…….. go to 3.

3.(a)Animal with segmented body….. …….go to 4.

(b) Animal with body not segmented……Nematoda.

4.(a) Animal with jointed appendages go to 6.

(b) Animal without jointed appendages to 5.

5.(a) Animal with long and cyndrical body……..annelida.

(b) Animal with short stout body…….. Trenada.

6.(a) Animal with antennae……...go to7.

(b) Animal without antennae ….. …….go to 8.

7.(a) Animal with one pair of antennae…… Insecta.

(b) Animal with more than one pair of antennae…….. crustacean.

8.(a) Animal with pincer –like mouthparts…….. Arachida.

(b) Animal with sucking mouth parts…….Acarina.

9.(a) Animal with long ribbon-like body …….cestoda.

(b) Animal with circular body…….. rinoidea).

Use the dichotomous key to identify the taxonomic group of each of the five specimens shown in the drawings.

In each case, show in sequence the steps (ef 1a,2a,5a, 7b) in the key that you followed to arrive at the identify of each specimen. **(5mks)**

Animal	**Steps followed**	**Identity**
E	……	……..
F	……..	……..
G	……	……..
H	……	……
J	……	……

b)i)Nam the phylum and the class to which specimen M belongs **(2mks)**

Phylum:

……

Class:

……

……

ii) Name the observation features that enabled you to place it in the class above**.** **(3mks)**

……

……

……

(c) With the help of a hand lens, examine the body of specimen M.

i)State with a reason in each case he observable features that enable the specimen to be a disease vector. **(2mks**

……

……

……

(ii) Name one disease transmitted by specimen **M.** **(1mk)**

……

……

iii) State two methods that can be used to prevent specimen M from spreading diseases**.** **(2mks)**

……

……

……

2. You are provided with specimens labeled S_1 S_2 and S_3

a. Using a scalpel blade split S_1 longitudinally and draw a well labeled diagram to show the internal structures.

State your magnification **(4mks)**

b. With a reason ,state the class to which the plant from specimen S_1 belongs to.

Class **(1mk)**

……

……

Reason **(1mk)**

……

……

c. Specimen S_2 is a germinated seedling of S_1.In the table below, name three structures and say which structure in S_1developed into the structure in S_2.

Structure in S_1	**Structure in S_2**

d.(i) Using specimens S_1 and S_3 ,name the type of germination in :-

S_1

S_3 (1mk)

ii. Give the difference between the this type of germination in (d) (i) above **(2mks)**

……

……

……

iii.Account for the type of germination in :-

S_1 2mks

……

……

S_3(2mks)

……

……

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