TOP SCHOOLS MOCKS

BIOLOGY PRACTICAL

(MOCK TRIALS 1-10)

An Exclusive Top-Notch KCSE Model Practical Questions.

Compilation of recent Top National Schools Mocks obtained from a panel of experienced KNEC Examiners within the Biology Practical set-up.

SERIES 1

Proudly prepared by an Exceptional team of Experienced Veteran KNEC examiners within the National Group of Mwalimu Agency.

For Marking Schemes/Answers

0746 222 000

MWALIMU AGENCY

TOP SCHOOLS MOCKS

BIOLOGY PRACTICAL

TRIAL 1 EXAM

Confidential

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

NOTE: The teacher in **charge of Biology** should **NOT** perform any of the experiments in the same room as the candidates or give any other information related to the experiments to the candidates.

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

INSTRUCTIONS

Each Candidate will require the following:-

a) *One spatula of substance labelled L (Fortified Exe wheat flour)*

b) *$2cm^3$ Copper sulphate solution*

c) *$2cm^3$Sodium hydroxide solution*

d) *$2cm^3$ DCPIP solution*

e) *$2cm^3$ Benedict's solution*

f) *Source of heat*

g) *3 test tubes*

h) *3 droppers*

i) *2oml of distilled water in a beaker*

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TOP SCHOOLS MOCKS

BIOLOGY

TRIAL 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 the following materials;

Substance labelled L
2cm^3 Copper sulphate solution
2cm^{3}Sodium hydroxide solution
2cm^3 DCPIP solution
2cm^3 Benedict's solution
Source of heat
3 test tubes
3 droppers

You are provided with a substance labeled **L**. Make a solution of substance **L** by adding 20 ml of distilled water and stir thoroughly. Design an experiment to investigate the food materials present in **L**. **(9 marks)**

Substance	Chemical test	Procedure	Observations	Conclusion
L				
L				
L				

(a) State the importance of the food substances present in **L** to the human body.**(2 marks)**

……

……

(b) Describe how the body deals with the substances mentioned in (a) above when they are in excess. **(2 marks)**

……

……

……

2. Study the photographs below and answer the questions that follow.

(a) (i) Identify the type of response exhibited by specimen **A.** **(1 mark)**

……

(ii) What is the survival value of the response you have identified in (a)(i) above **(1 mark)**

……

(b) (i) Identify the phenomenon exhibited by specimen **B.** **(1 mark)**

……

(ii) State the significance of the phenomenon in (b) (i) above. **(1 mark)**

……

……

(c) Explain how the response exhibited by seedlings in photograph **C** occurred. **(3 marks)**

……

……

……

……

(d) Study the photograph below showing a certain trait in man.

(i) Identify the trait exhibited in the photograph above. **(1 mark)**

……

(ii) The trait you have identified in (d)(i) above is **sex linked**. In which chromosome is it contained. **(1 mark)**

……

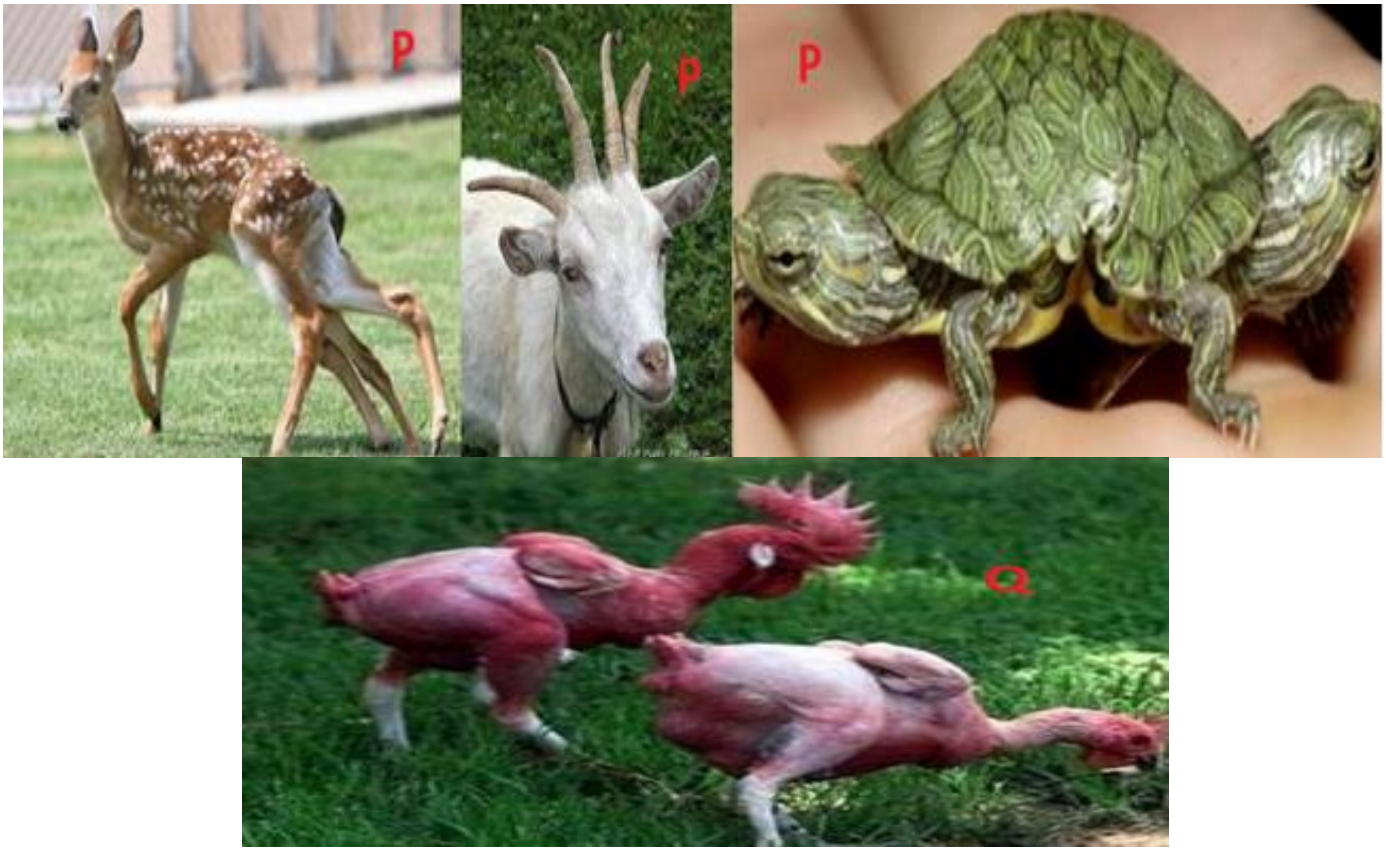
(iii) Name any other sex linked trait in man. **(1 mark)**

……

(iv) The man in the photograph married a woman. Use a genetic cross to predict the offspring of the above marriage. Let $\mathbf{Y^H}$ represent the gene for the trait above.

(4 marks)

(e) The photographs below show certain chromosomal mutations.

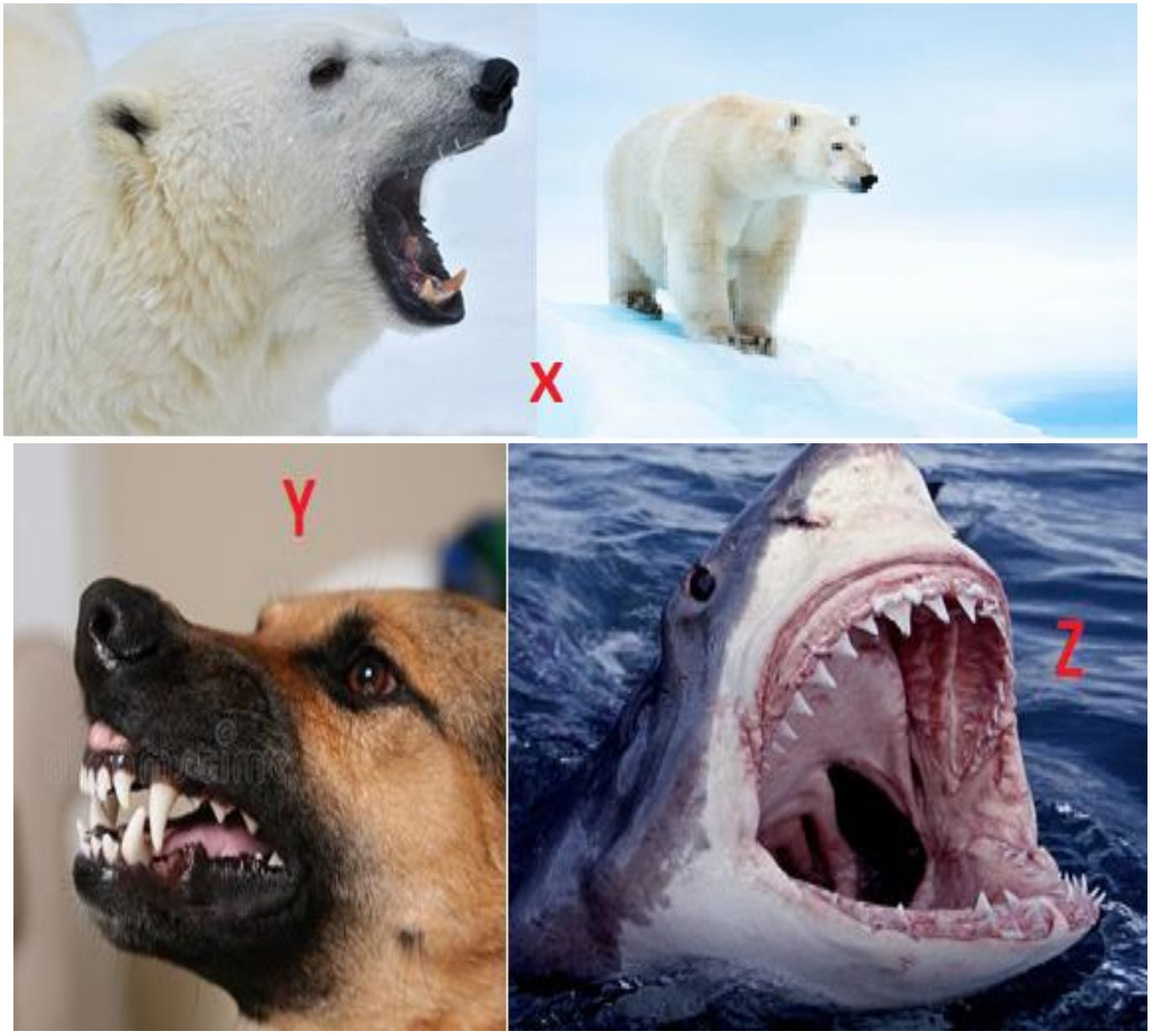


(i) Identify them

P …… **(1 mark)**

Q …… **(1 mark)**

3. Study the photographs below and answer the questions that follow.



(a) Give **two visible** survival adaptive features for the organism in photograph **X.(2 marks)**

……

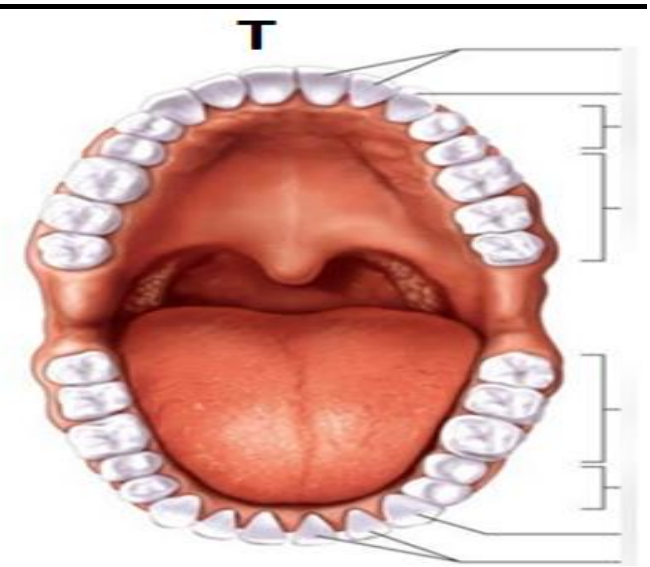
……

(b) Identify the dentitions exhibited in photograph **Y** and **Z** **(2 marks)**

Y ……

Z ……

(c) Study the photographs below showing a certain type of tooth and teeth arrangement in man.



(i) Label any **three** parts of the tooth in photograph **S.** **(3 marks)**

(ii) Give **two** adaptations of the tooth to its function. **(2 marks)**

……

……

……

(iii) Write the **dental formula** for the teeth arrangement in photograph **T.** **(1 mark)**

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TOP SCHOOLS MOCKS

BIOLOGY PRACTICAL

TRIAL 2 EXAM

Confidential

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NOTE: The teacher in **charge of Biology** should **NOT** perform any of the experiments in the same room as the candidates or give any other information related to the experiments to the candidates.

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INSTRUCTIONS

Each Candidate will require the following:-

a) *10cm visking tubing*

b) *50cm^3 Iodine solution*

c) *20cm^3 starch suspension*

d) *100ml beaker*

e) *30cm sewing thread*

f) *A dropper*

g) *Distilled water.*

TOP SCHOOLS MOCKS

BIOLOGY

TRIAL 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*

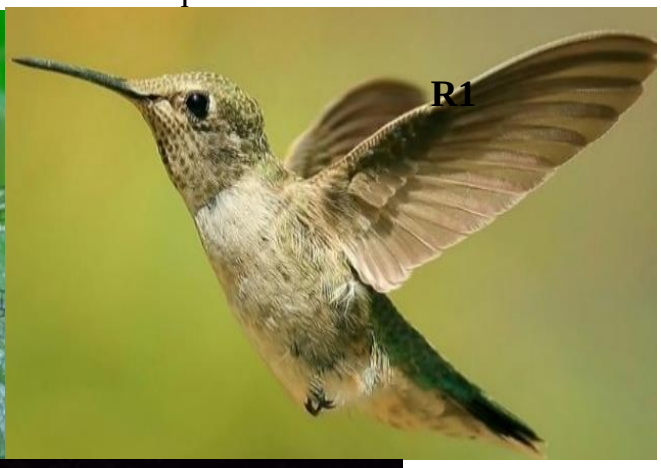
FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

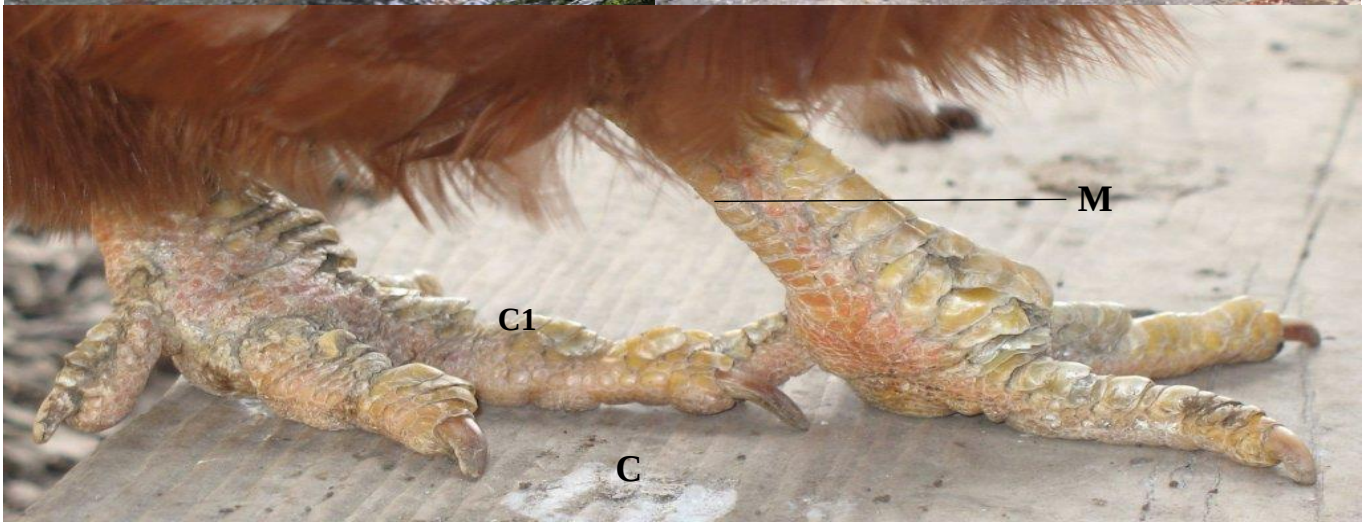
1. Study photographs shown below then answer the questions.

Q

R



A



(a) ***State*** the type of evolution represented by structures Q_1, R_1 and S_1. **(1mk)**

……

(b) ***Explain*** the type of evolution identified in (a) above. **(1mk)**

……

……

(c) ***Give*** the evolution term used to describe structures:

(i) Q_1, R_1 and S_1 **(1mk)**

……

(ii) A_1, B_1 and C_1 **(1mk)**

……

d) ***What*** type of evolution is illustrated by the limbs **A1**, **B1** and **C1**? **(1mk)**

……

e) (i) ***Name*** class for each **Q, R** and **S.**

Q …… **(1mk)**

R …… **(1mk)**

S …… **(1mk)**

(ii) ***Give two*** observable reasons for your answer for class **S.** **(2mks)**

……

……

(f) (i) ***Suggest*** the diet of animals **B** and **R**.

B…… **(1mk)**

R…… **(1mk)**

(ii) How is beak of animal **B** adapted to its function? **(1mk)**

……

……

g) How are animals A, B and C adapted for thermoregulation? **(1mk)**

……

……

2. You are provided with Iodine solution, starch suspension and visking tubing.

- Wet the visking tubing in running water to soften it and make it easy to open. Tie one end of the tubing tightly.
- Using a dropper, put starch suspension into the tubing until about three-quarters full.
- Tie the open end of the tubing tightly.
- Ensure that there is no leakage at both ends of the tubing.
- Clean outer surface of the visking tubing over running water to remove all traces of starch Suspension.
- Place the visking tubing containing starch suspension into the beaker with iodine solution and leave the set up undisturbed for about 30minutes.
- Remove the tubing from the beaker and observe.

(a) Record your observation in a table by indicating the colour of the solution at the beginning on at the end of the experiment. **(4mks)**

	Starch solution inside tubing	**Iodine solution in the beaker**
Start experiment		
End of experiment		

(b) Account for the observations**.** **(6mks)**

……

……

……

……

……

……

(c) Explain the modifications you could have made to realize faster results in the above experiment. **(2mks)**

……

……

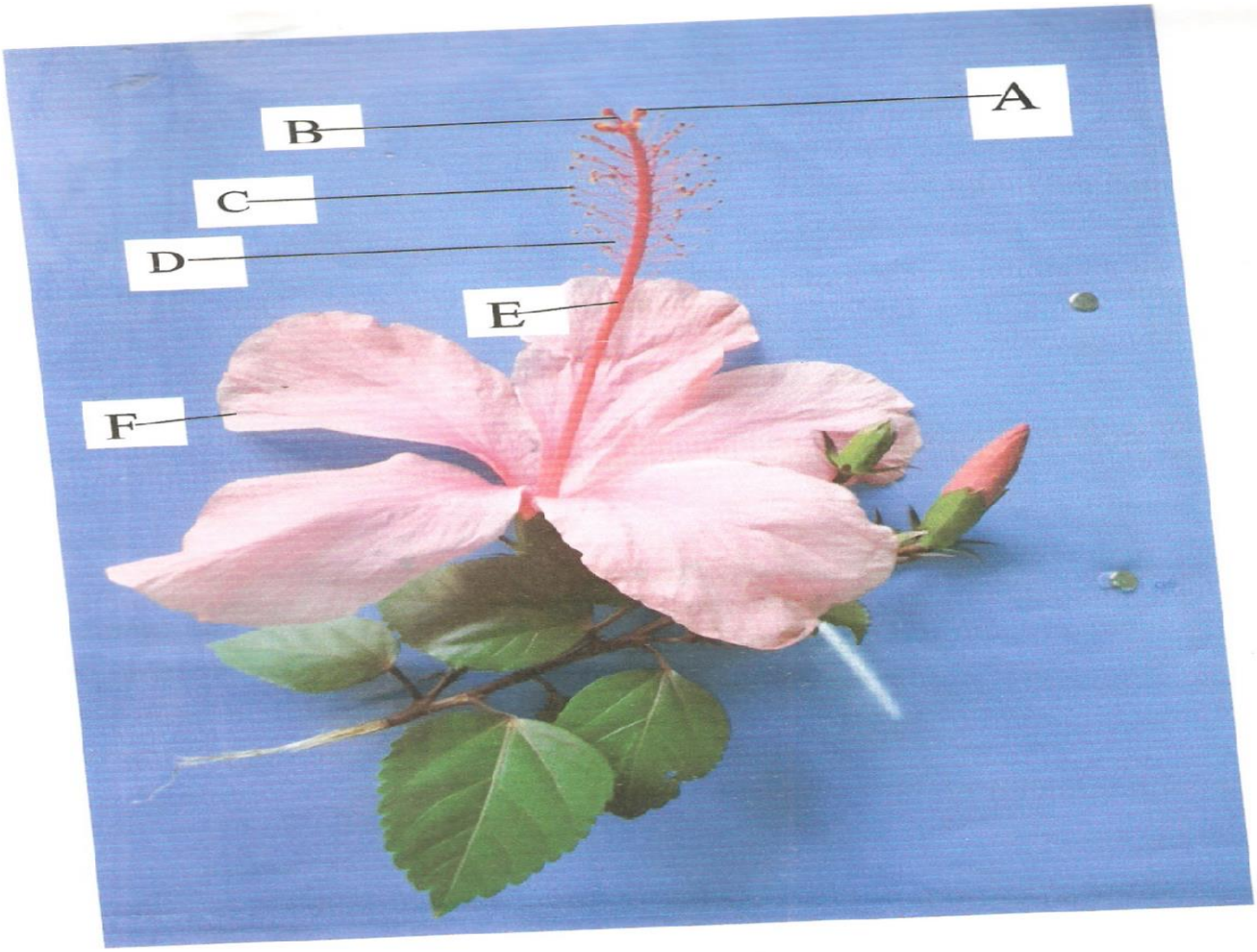
……

(d) State the importance of the process under investigation in the above experiment in both plants and animals as far as reproduction is concerned. **(2mks)**

……

……

3. You are provided with a photograph of a flower of a higher plant.



_____ X

_____ Y

(a) With reasons, state the class of kingdom plantae from which the specimen in the diagram was obtained.

Class **(lmk)**

……

Reasons **(2mks)**

……

……

(b) Name the parts labeled A, E, and F. **(3mks)**

A: ……..

E: ……..

F: ……..

(c) State how the specimen shown in the photograph is adapted to its mode of pollination. **(2mks)**

……

……

……

(d) Label the structure in the photograph which protects the flower before it blooms. **(1mk)**

……

……

……

(e) Which letter in the photograph represents structure where the male gametes are produced. **(lmk)**

……

……

(f) Calculate the image magnification of the leaf from point X to Y if its actual length was 2cm. show your working. **(2mks)**

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BIOLOGY PRACTICAL

TRIAL 3 EXAM

Confidential

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NOTE: The teacher in **charge of Biology** should **NOT** perform any of the experiments in the same room as the candidates or give any other information related to the experiments to the candidates.

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INSTRUCTIONS

Each Candidate will require the following:-

a) *Transparent ruler*
b) *20mls of* ***distilled water*** *in a boiling tube labelled* ***solution X***.
c) *20mls of* ***saturated NaCl solution*** *in a boiling tube labelled* ***solution Y***.
d) *DCPIP solution*
e) *A large sized maize grain labelled* ***specimen X***
f) *Scalpel*
g) *NaOH solution (about 5ml)*
h) *Bunsen burner*
i) *Labels (2 pieces)*
j) *Medium sized passion fruit labelled* ***Specimen Z***.
k) *Test tube holder*
l) *Test tubes (3 pieces)*
m) *Complete leaf (medium sized) of* ***Sukuma wiki*** *(kales) labelled* ***Specimen A***.
n) *Boiling tubes (2 pieces)*
o) *Mortar and pestle*

p) *Distilled water (about 15ml) in a small beaker*

q) *Benedict's solution (about 5mls)*

r) *$CuSO_4$ solution (about 2mls) with a dropper*

s) *Measuring cylinder (50ml capacity)*

t) *Test tube holder*

u) *Bean pod (any type of bean) or Crotalaria pod labelled* ***Specimen Y***.

TOP SCHOOLS MOCKS

BIOLOGY

TRIAL 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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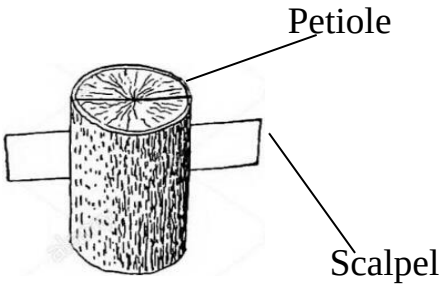
FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. You are provided with **Specimen A, Solution X** and **Solution Y.**

(a) Cut out a cylindrical portion of the petiole from **Specimen A** measuring 5cm long (reserve the leaves for **part b** of the question). Make a longitudinal section through the petiole so as to divide it into two identical straight halves as shown below;



Place one straight half of the petiole into the boiling tube containing **solution X**, and label the tube as **Set up I.** Place the other straight half of the petiole into the boiling tube containing **solution Y**, and label the tube as **Set up II.** Leave the two set ups to stand for 30 minutes. Remove the two halves of the petiole from the solutions and examine them.

(i) Account for the curvature of half of the petiole in **set up I.** **(5marks)**

……

……

……

……

……

(ii) Based on your observation of the curvature of half of the petiole in **set up II**, state the nature of **solution Y** in relation to plant cells**.** **(1mark)**

……

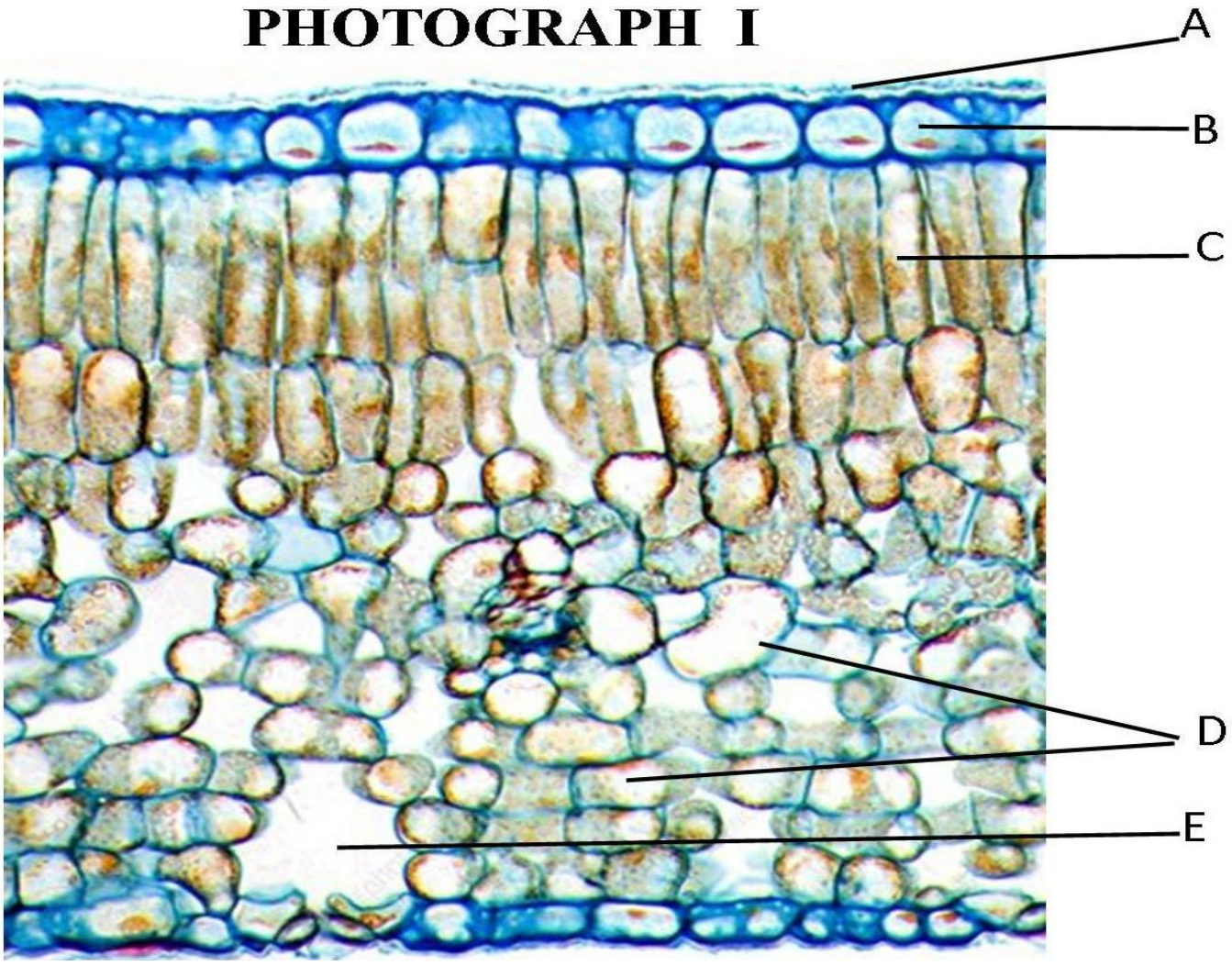
……

(b) Cut the leaves of specimen A into small pieces and place them into a mortar. Add 10ml of distilled water, then grind them using a pestle so as to obtain an extract called **solution R**. Using the reagents provided, carry out various tests using the procedures in the table below to determine the food substances in the solution R. In each case, state the observation and conclusion made**.** **(6 marks)**

Food substance	Procedure	Observation	Conclusion
Proteins	-Place 2ml of solution R into a test tube. - Add equal amount of NaOH solution. -Add $CuSO_4$ solution dropwise and shake		
Reducing sugars	-Place 2ml of solution R into a test tube. -Add equal amount of Benedict's solution. -Boil the mixture.		
Vitamin C	-Place 2ml of DCPIP into a test tube. -Add solution R dropwise as you shake.		

(c) The **photograph I** below shows the internal structure of **Specimen A.** Study it carefully and answer the questions that follow.

PHOTOGRAPH I



(i) Identify the structures labelled A and B. **(2marks)**

A.....

B.....

(ii) State **one** structural difference between cells C and D. **(1mark)**

.....

.....

(iii) What is the function of the part labelled E **?** **(1mark)**

.....

.....

2. You are provided with **Specimens X, Y** and **Z.**

(a) State the type of dry, indehiscent fruit represented by **specimen X.** **(1mark)**

.....

.....

(b) With a reason, state the method of dispersal of **specimen Y**. **(2marks)**

(i) Method of dispersal.....

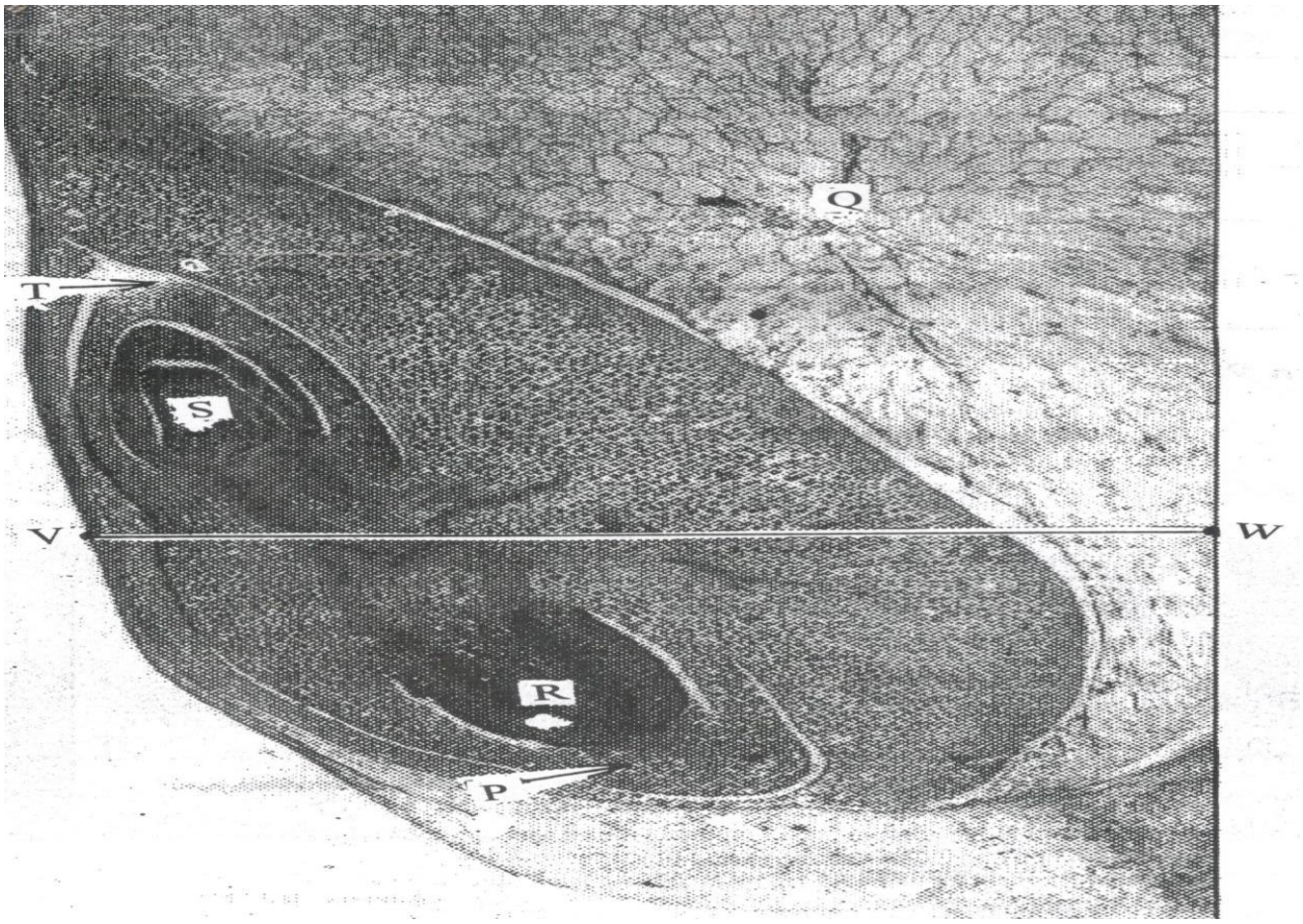
(ii) Reason

.....

.....

(c) Cut **specimen Z** transversely so as to obtain two identical halves. Draw and label the cut surface of one half. **(3marks)**

(d) Below is a photograph of the internal longitudinal section of **Specimen X**.



(i) Name the parts labelled P and S**.** **(2marks)**

P.....

S.....

(ii) State the function of the part labelled T. **(1mark)**

.....

(iii) Identify the region that would stain blue black with iodine solution**.** **(1mark)**

.....

(e) The magnification of the internal longitudinal section in the above photomicrograph was X30,000. Measure the distance of the dark horizontal line between V and W in millimetres. Calculate the actual width of the section between V and W in micrometres. **(2marks)**

.....

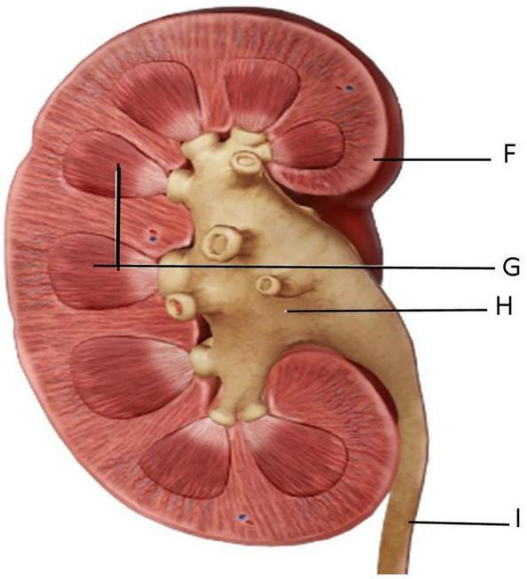
.....

.....

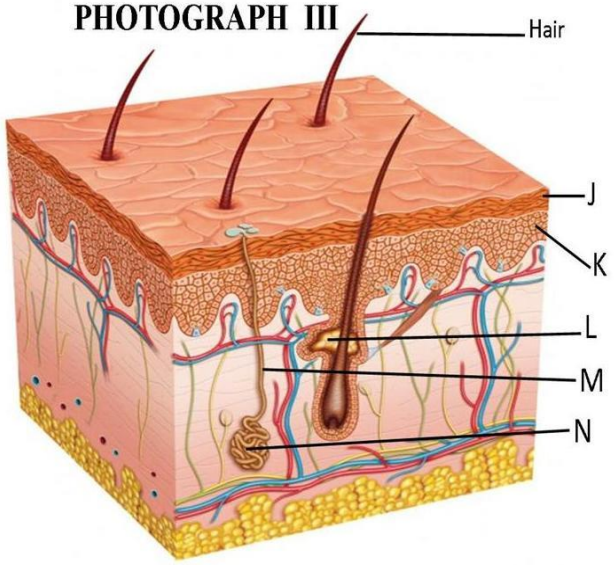
.....

3. Below are photographs II and III of the mammalian kidney and skin respectively.

PHOTOGRAPH II



PHOTOGRAPH III



(a) Identify the layers labelled F, J and K. **(3marks)**

F.....

J.....

K.....

(b) State the function of each of the parts labelled L and M**.** **(2marks)**

L .....

M.....

(c) Explain how the structure labelled N is adapted to its function. **(1mark)**

.....

.....

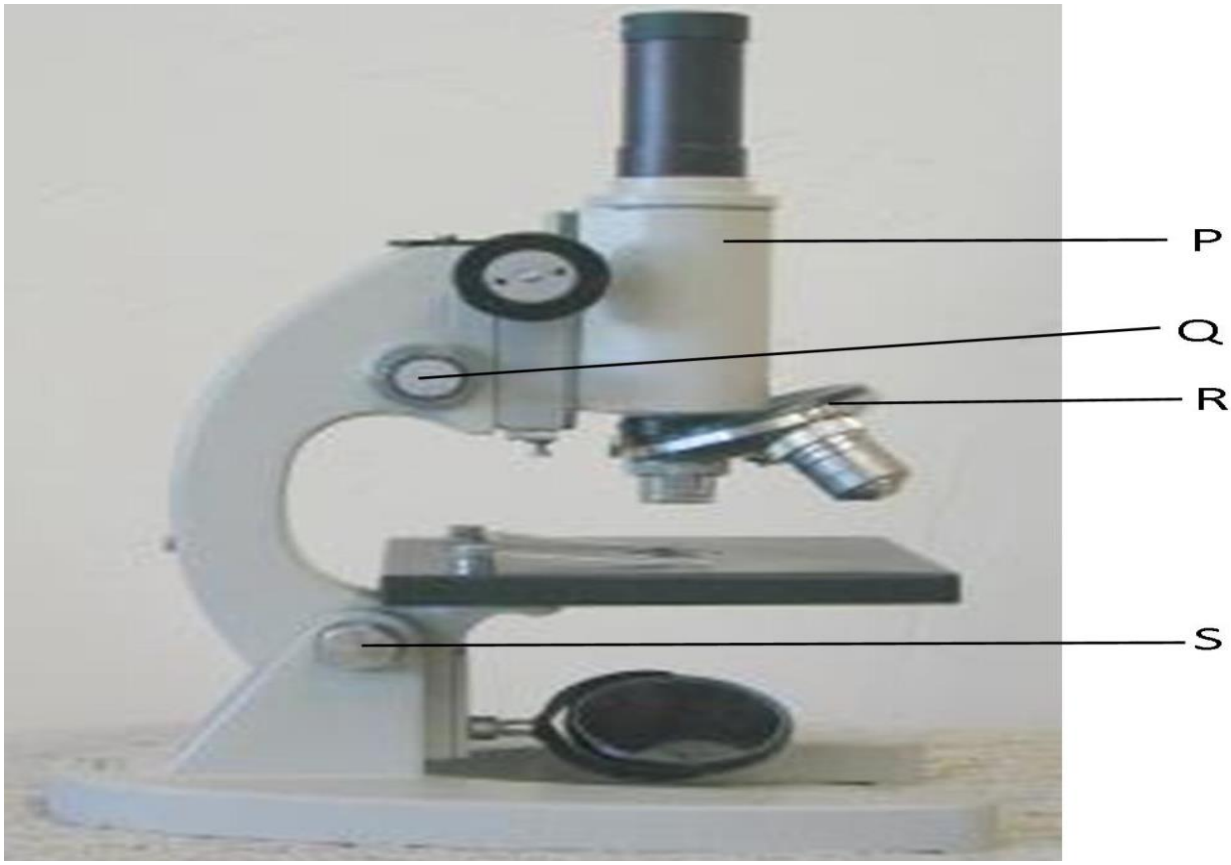
.....

(d) Identify part in photograph II that contains glomeruli**.** **(1mark)**

.....

.....

(e) The cells in the layer labelled J can be examined using the light microscope shown below.



(i) Identify on the above photograph the structure that would be adjusted to improve on the clarity of blurred images of the cells in layer J. **(1mark)**

……

(ii) State the significance of using a sharp razor or scalpel to cut through layer J to obtain the cells for examination in the above microscope. **(1mark)**

……

……

(iii) Name the part labelled S in the above microscope**.** **(1mark)**

……

(iv) State **two** functions of the light microscope during examination of the cells in layer J. **(2marks)**

……

……

……

TOP SCHOOLS MOCKS

BIOLOGY PRACTICAL

TRIAL 4 EXAM

Confidential

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INSTRUCTIONS

Each Candidate will require the following:-

1. *Specimen* ***L*** *- Axis vertebra*
2. *Specimen* ***M*** *- Lumbar vertebra*
3*. Irish potato tuber*
4. *Scalpel*
5. *10 ml measuring cylinder*
6. *5 test tubes in a test tube rack*
7. *20% Hydrogen peroxide*
8. *Benedict's solution*
9. *Iodine solution*
10. *Morta and apestle*
11. *Source of heat*
12. *A ruler*
13. *Distilled Water in a wash bottle.*

TOP SCHOOLS MOCKS

BIOLOGY

TRIAL 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*

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 irish potato tuber labeled specimen **K,** use it to answer questions that follow.

Cut out two cubes whose sides measure 1cm from the irish potato provided

Label three test-tubes as, **A**, **B** and **C** and put them into the test-tube rack.

A) Crush one cube to obtain a paste and add about 15 cm^3 of distilled water to the paste to form a solution and then carry out the following procedure;

i) Use a measuring cylinder to pour 10 cm^3 of potato extract solution into test-tube **A**.

ii) Use the measuring cylinder to transfer 5 cm^3 of potato solution extract from test-tube **A** to test-tube **B**.

iii) Use the measuring cylinder to add 5 cm^3 of distilled water to test-tube **B**. Place a stopper in test-tube **B** and shake it.

iv) Remove the stopper. Use the measuring cylinder to transfer 5 cm^3 of the liquid in test-tube **B** to test-tube **C**.

v) Use the measuring cylinder to add 5 cm^3 of distilled water to test-tube **C**. Place a stopper in test-tube **C** and shake it. Using a measuring cylinder reduce the volume of solution **C** to 5 cm^3.

a) Table below shows the percentage concentration of the potato extract solution.

test-tube	percentage concentration of potato extract solution
A	100.00
B	
C	

Complete the table above by calculating and writing in the percentage concentration of potato extract solutions in test-tube **B** and **C**. **(2mks)**

b) Using a measuring cylinder pour 1 cm^3 to each of hydrogen peroxide to the contents in test tube **A** to **C** and make the observations **(3mks)**

Test tube	Observations
A	
B	
C	

(i) What was the aim of the investigation above (**1mk)**

……

(ii) Write the word equation for the reactions taking place in the test tubes (**1mk)**

……

(iii) What will be the expected observation if the irish potato was replaced with a piece of mammalian liver (**1mk)**

……

(iv) Explain your answer in c (iii) above (**2mk**)

……

……

……

(B) Crush the remaining cube to obtain the paste. Use the reagents provided to and carry out food test on the extract. **(4mks**)

TEST	PROCEDURE	OBSERVATIONS	CONCLUSION

2. You are provided with specimens labeled **L** and **M**. Study them then answer questions that follow:

a) Identify the specimens. **(2mk)**

L……..……..

M.....

b) Name the part of the body where each is found. **(2mk)**

L……..…….

M……

c) State **three** adaptive characteristic features of the bone **L**. **(3mks)**

……

……

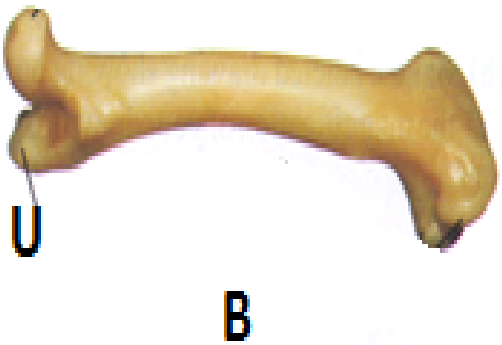
……

……

d) State two observable differences between bones L and M. **(2mks)**

Bone L	Bone M

e) Study the diagrams below and answer questions that follow.



B

C

I) Identify the bone labelled C in the diagram. **(1mk)**

……

II) Name the type of joint and bone formed at the proximal and distal end of bone B **(4mks)**

Proximal end;

(i) Bone ……..…….

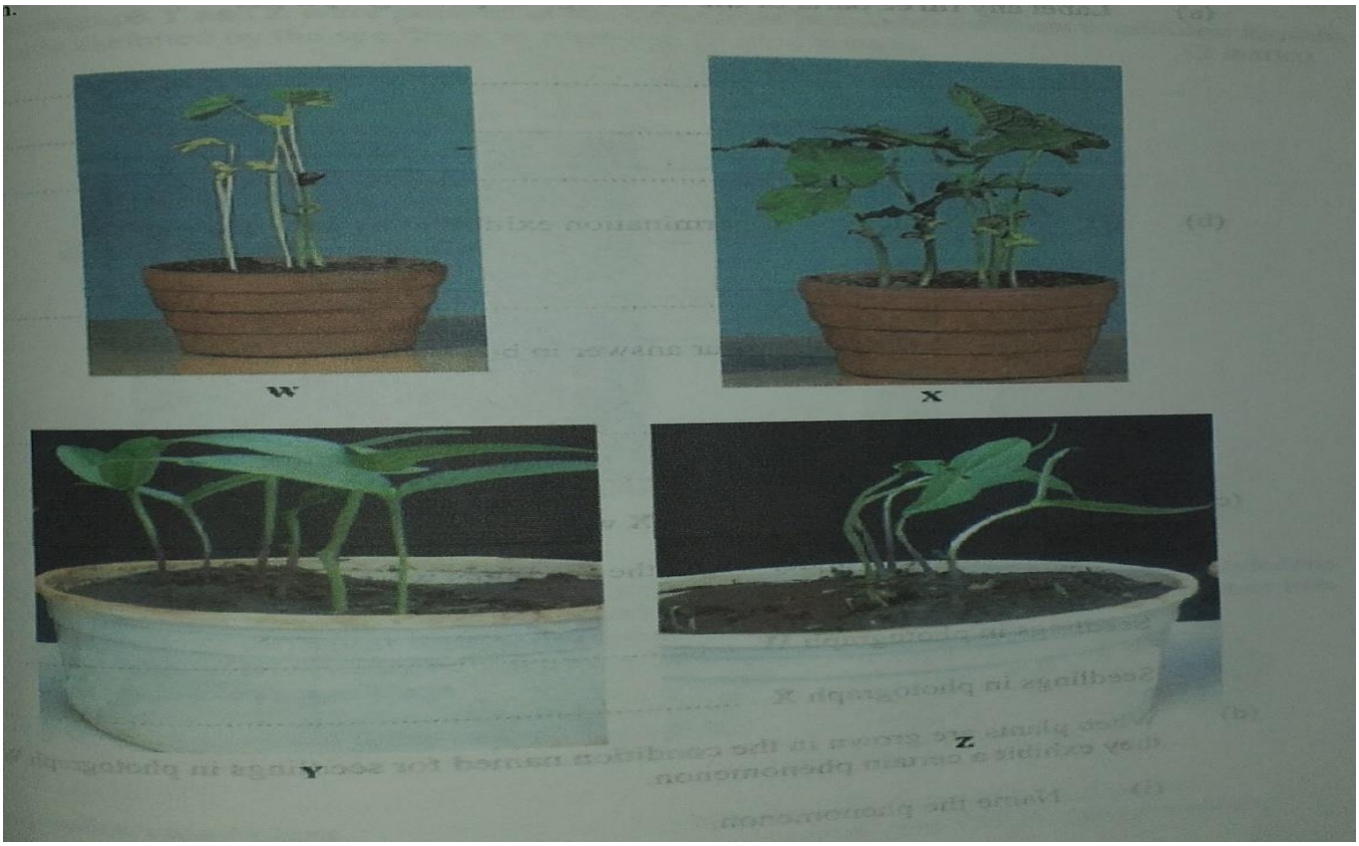
(ii) Type of joint ……..

Distal end;

(i) Bone(s)…….

(ii) Type of joint ……

3. The photo graphs labelled **W, X, Y** and **Z** show seedlings that were grown under different conditions. Examine them.



(a) Label any **two** parts of the seedlings in photograph **W**. **(2 mks)**

(b)(i) Name the type of germination exhibited by the seedlings. **(1 mk)**

……

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

……

……

(c) Seedlings in photographs **W** and **X** were planted at the same time. State the conditions under which the seedlings were grown. **(2 mks)**

(i) Seedlings in photograph **W**.

……

(ii) Seedlings in photograph **X**.

……

(d) When plants are grown in the condition named for seedlings in photograph **W**, they exhibit a certain phenomenon.

(i) Name the phenomenon. **(1 mk)**

……

(ii) State the significance of the phenomenon named in d(i). **(1 mk)**

……

……

(e) Using observable features only, state **two** differences between the seedlings in photographs **W** and **X**. **(2 mks)**

W	X

(f) Seedlings in photographs **Y** and **Z** were planted at the same time but under different conditions. Explain how the response exhibited by seedlings in photograph Z occurred. **(2 mks)**

……

……

……

TOP SCHOOLS MOCKS

BIOLOGY PRACTICAL

TRIAL 5 EXAM

Confidential

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NOTE: The teacher in **charge of Biology** should **NOT** perform any of the experiments in the same room as the candidates or give any other information related to the experiments to the candidates.

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

INSTRUCTIONS

Each Candidate will require the following:-

1. *An orange labelled as specimen E*
2. *5Ml 0.01% DCPIP in a test tube*
3. *Scalpel*
4. *Two 50ml beakers*
5. *Dropper*
6. *Sieve*
7. *Two pieces of tradescantia/zebrina stem 3cm long*
8. *A pair of forceps*
9. *50ml concentrated salt solution labelled L1*
10. *50ml distilled water labelled L2*
11. *Means of timing*

TOP SCHOOLS MOCKS

BIOLOGY

TRIAL 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*

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 labelled E and 0.01% DCPIP. Examine specimen E and answer the questions that follow.

(a)(i) What part of the plant is the specimen E **(1mk)**

……

(ii) Give a reason for your answer in (a)(i) above **(1mk)**

……

(b) Cut a transverse section through specimen E.

(i) Draw and label one of the cut surface **(4mk)**

(ii) State the type of placentation of specimen E **(1mk)**

……

(c) State how specimen E is adapted to its mode of dispersal. **(2mks)**

……

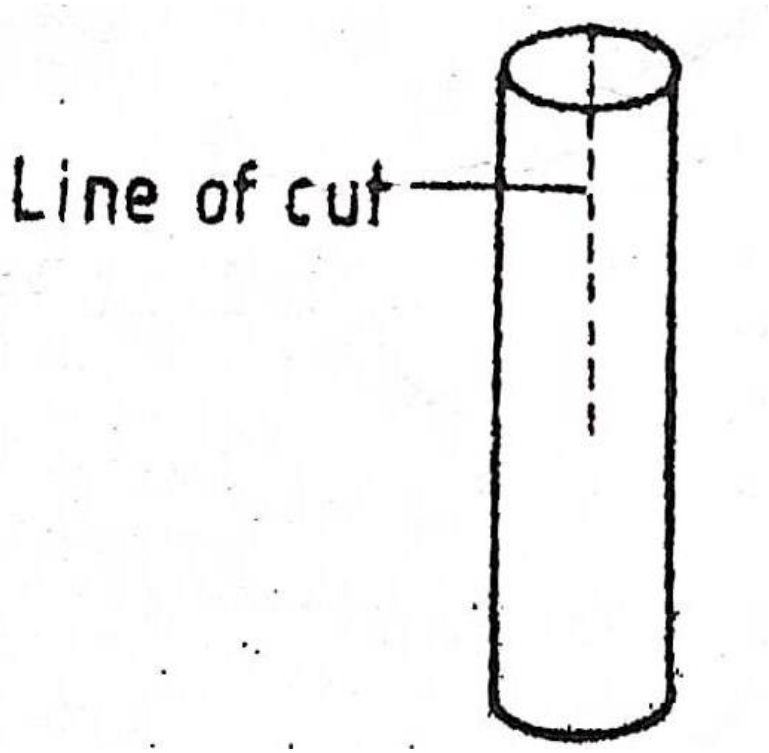
……

……

(d) Squeeze out the juice from specimen E into a beaker. Filter and discard the residue. Use the reagent provided to test for the food substance present in juice obtained from specimen E. Observe and record in the table below. **3mks)**

PROCEDURE	OBSERVATION	CONCLUSION

2. You are provided with two pieces of plant material labeled D. Using a scalpel cut a slip halfway through the middle of each piece as shown in the diagram below.



Place one piece in the solution labelled L_1 and the other in solution L_2. 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

L_1 **(1mrk)**

……

……

L_2 **(1mrk)**

……

……

(ii) Account for the observations in (a)(i) above. **(2marks)**

……

……

(b) Examine the pieces.

(i) Record other observations beside those made in (a) (i)above. **(2 marks)**

……

……

(ii) Account for the observations in (b) (i) above. **(6marks)**

……

……

……

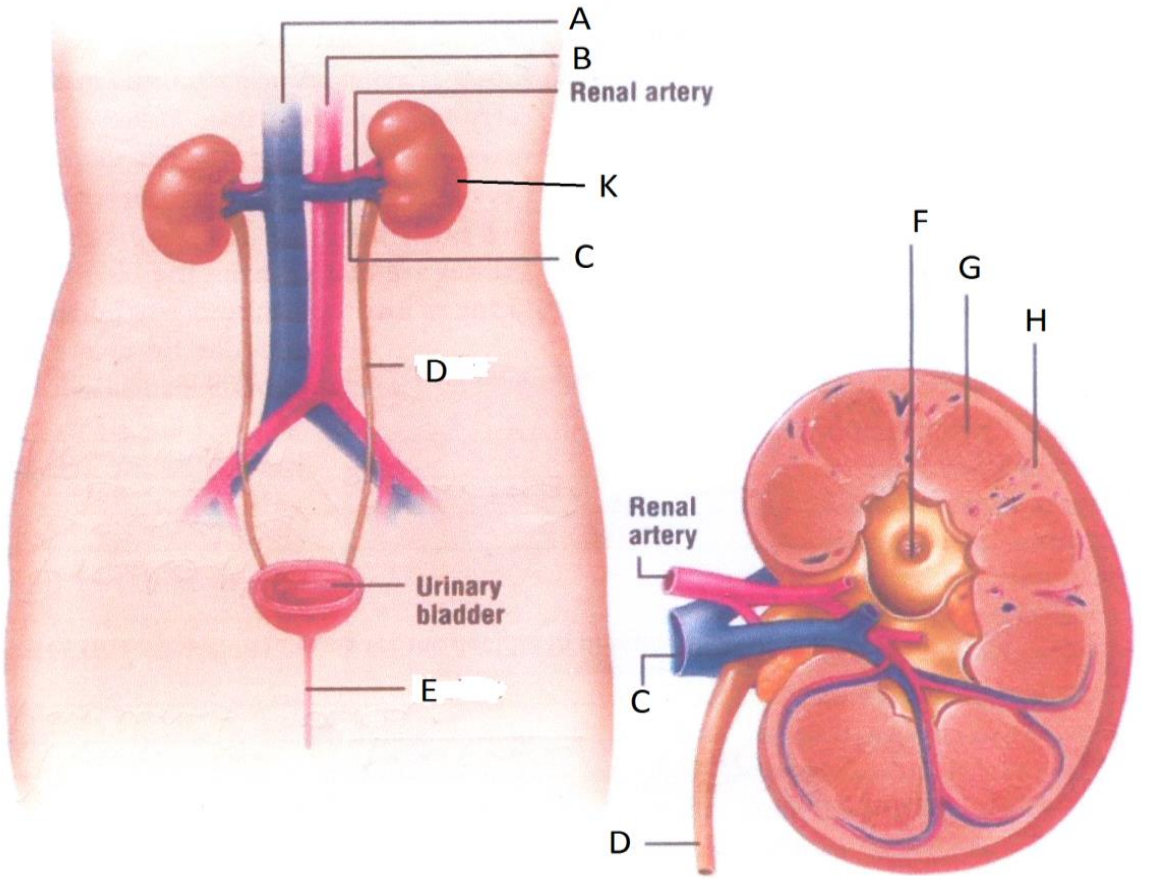
……

……

……

……

3. The photograph below represents human male urinary system. Study it carefully and answer the questions that follow.



Longitudinal Section of **K**

(a) State **two** functions of the part labeled K. **(2 marks)**

……

……

(b) Name the parts labeled **A, B, C, D, F, G, and H.** **(7 marks)**

A……

B……

C……

D……

F……

G……

H……

(c) State the functions of each of the following parts;

i)Renal artery **(1 mark)**

……

……

ii) Urinary bladder **(1 mark)**

……

……

iii) Part labeled **E** **(1 mark)**

……

……

(d) (i)State one part of the nephron found in the region labelled **G.** **(1mark)**

……

(ii) Name two kidney disorders **(2marks**

……

……

(**iii)**Name the hormone that is responsible for reabsorption of water in the renal tubule.

(1mark)

……

TOP SCHOOLS MOCKS

BIOLOGY PRACTICAL

TRIAL 6 EXAM

Confidential

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INSTRUCTIONS

Each Candidate will require the following:-

a) *Specimen **R**- a piece of ripe pineapple fruit*
b) *2mls Benedict's solution placed in a test tube with a dropper*
c) *2mls of 10% Sodium hydroxide solution placed in a test tube with a dropper*
d) *2mls of 1% Copper sulphate solution placed in a test tube with a dropper*
e) *Source of heat*
f) *4 test tubes in a rack*
g) *2 Droppers*
h) *Scalpel/Razor blade*
i) *Pestle and mortar*
j) *Filter paper*
k) *4mls DCPIP solution placed in a small beaker with a dropper*
l) *4mls of 0.1% solution of Ascorbic acid supplied in a test tube*
m) *White tile*

This is the last printed page

TOP SCHOOLS MOCKS

BIOLOGY

TRIAL 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 the following reagents and materials.

a) Specimen **R**
b) Benedict's solution
c) Sodium hydroxide solution
d) Copper sulphate solution
e) Source of heat
f) 3 test tubes in a rack
g) Droppers
h) Scalpel/Razor blade
i) Pestle and mortar
j) Filter paper

Study the specimen **R** provided.

(a) Identify the type of fruit. **(1 mark)**

……

(b) With reasons, identify the method of dispersal for the specimen.

Method of dispersal **(1 mark)**

……

Reasons **(2 marks)**

……

……

……

(c) By use of the scalpel provided, peel off the outer cover of the specimen **R** to reveal the inner juicy part. Extract a small portion of the juicy part, place in a mortar and mash it using a pestle.
Use the filter paper provided to filter the extract from the specimen R.
Divide the extract from specimen **R** into two portions each $2cm^3$ and use them as follows;

Portion one

Use the reagents provided to test for the food substances present in portion **1**. Use the table below as a guide. **(6 marks)**

Food substance	Procedure	Observation	Conclusion

Portion two

(d) **(i)**To 1cm^3 of DCPIP in a test tube, add 0.1% solution of Ascorbic acid drop by drop until the colour of DCPIP disappears. Shake the test tube after addition of each drop. Record the number of droplets used. **(1 mark)**

……

……

ii) To another 1cm^3 of DCPIP in a test tube add the **portion two** drop by drop, shaking the test tube after addition of each drop until the colour of DCPIP disappears. Record the number of drops used **(1 mark)**

……

……

iii) From the results obtained in (d) (i) and (ii) above, calculate the percentage of Ascorbic acid in the juice obtained from specimen **R**. Show your working **(2 marks)**

……

……

……

……

2. Study the photographs below and answer the questions that follow.

(a) (i) By use of a flow chart, show the possible energy flow in the ecosystem above.**(1 mk)**

(ii) State **two** ways in which energy is lost from one trophic level to the next one. **(2 mks)**

……

……

(b) With **observable reasons**, identify the classes of specimen **X** and **Z**

Specimen **X**

Class ……(1 mark)

Reasons (2 marks)

……

……

Specimen **Z**

Class **(1 mark)**

……

Reason **(1 mark)**

……

……

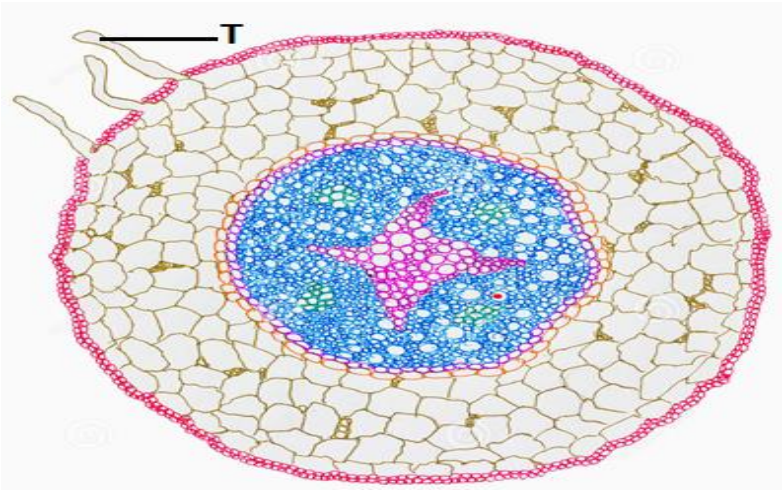
(c) Describe **two** adaptations of organism labeled **Y** to its habitat. **(2 marks)**

……

……

……

(d) Study the photograph below and answer the questions that follow. **(1 mark)**



(i) Which part of the plant is represented by the cross-section shown above

……

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

……

……

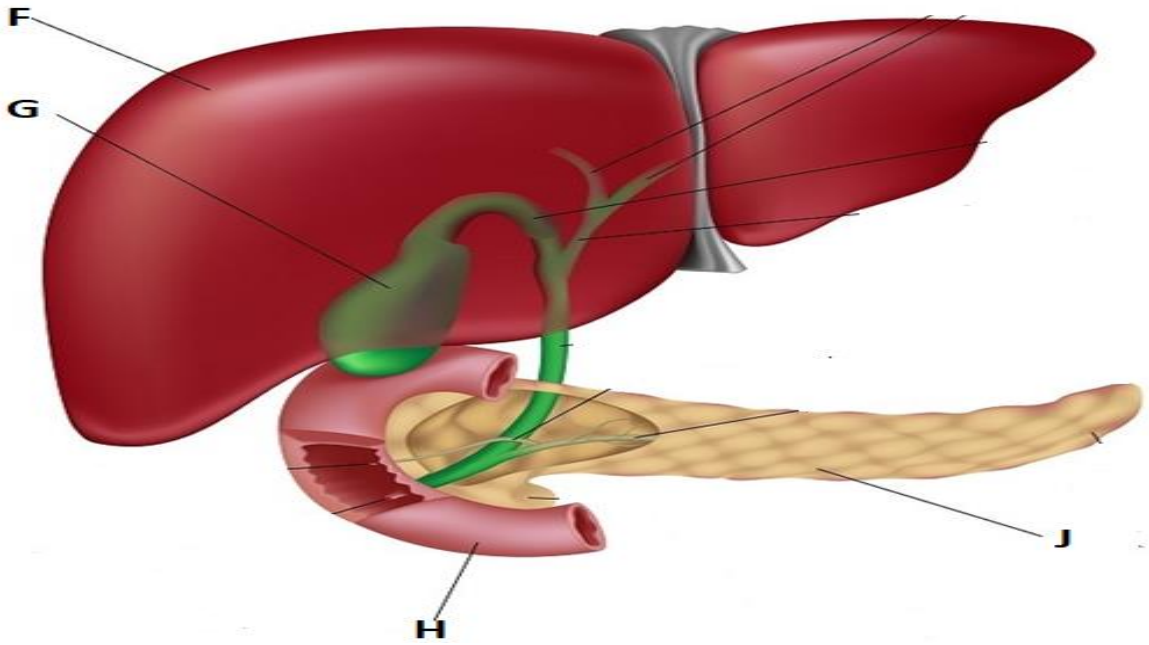
……

(iii) Give **one** adaptation of the part labeled **T** to its function. **(1 mark)**

……

……

3. Study the photographs below and answer the questions that follow.



(a) Identify the following parts **(2 marks)**

F……

G ……

(b) (i) Identify the secretions stored in part labeled **G** **(1 mark)**

……

(ii) Give **two** functions of the secretions you have identified in (b)(i) above **(2 marks)**

……

……

……

(c) (i) Give **two** major roles of the part labeled **J** . **(2 marks)**

……

……

(ii) State the hormone secreted by the part labeled **H** . **(1 mark)**

……

(d) Study the photograph below and answer the questions that follow.

(e) (i) Identify the following parts. **(2 marks)**

K……

L ……..

(ii) Give **two** adaptations of the part labeled **M** **(2 marks)**

……

……

……

TOP SCHOOLS MOCKS

BIOLOGY PRACTICAL

TRIAL 7 EXAM

Confidential

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INSTRUCTIONS

Each Candidate will require the following:-

(i) *4 test tubes in test tube rack.*

(ii) *1 boiling tube*

(iii) *Iodine solution – supplied with a dropper*

(iv) *Adequate distilled water*

(v) *Benedict solution– supplied with a dropper*

(vi) *Means of heating*

(vii) *10% Sodium Hydroxide– supplied with a dropper*

(viii) *1% Copper (II) Sulphate– supplied with a dropper*

(ix) *DCPIP– supplied with a dropper*

(x) *$10cm^3$ of solution W in a boiling tube labeled as **solution W***

NB: measure 30gms of glucose and 15gms of egg albumen in a 500ml beaker, add $200cm^3$ of distilled water and stir to dissolve. Top up with distilled water to make $500cm^3$solution. Label this solution as solution **W**

TOP SCHOOLS MOCKS

BIOLOGY

TRIAL 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

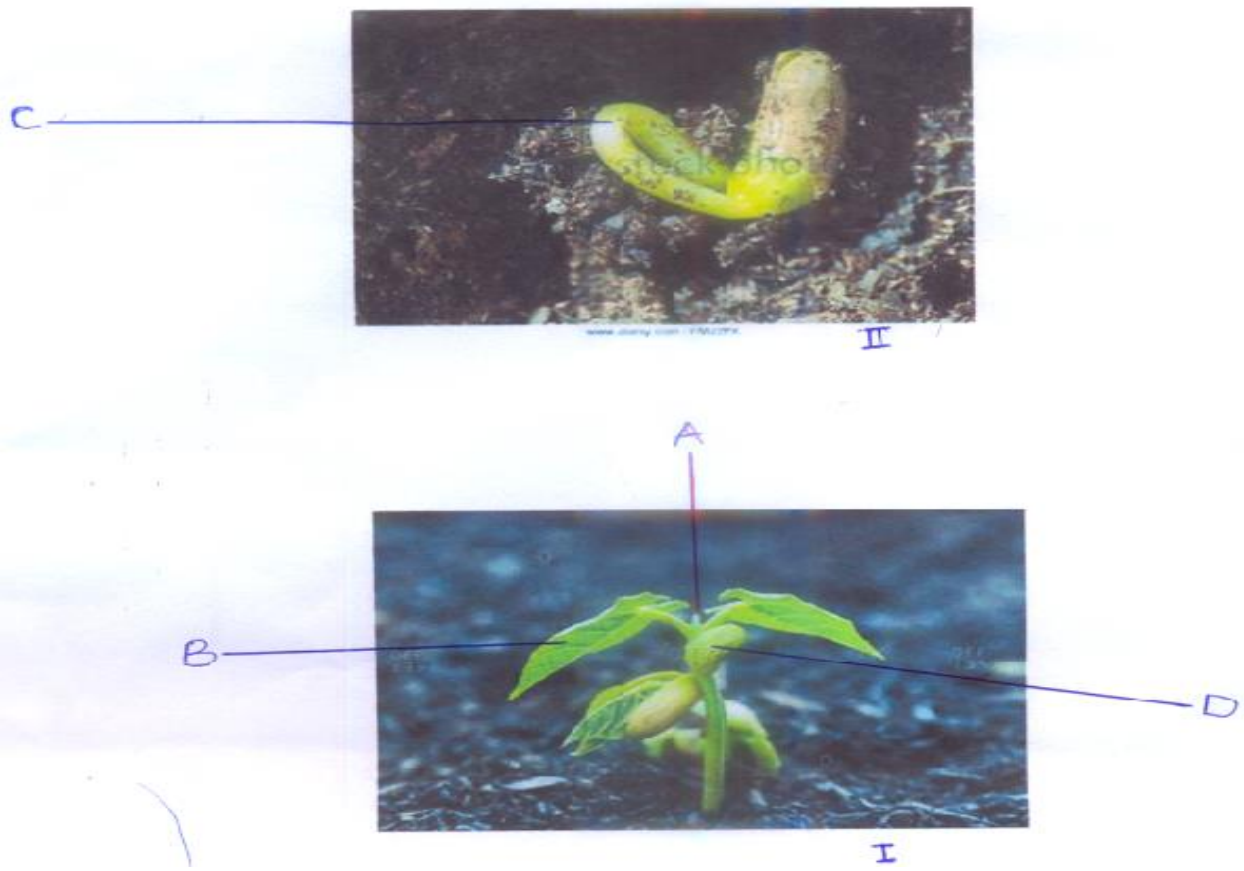
SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. You are provided with solution W in a boiling tube. Using the provided reagents, carry out possible food tests to identify food substances present in solution.**(14marks)**

FOOD SUBSTANCE	PROCEDURE	OBSERVATION	CONCLUSION

FOOD SUBSTANCE	PROCEDURE	OBSERVATION	CONCLUSION

2. Examine the photographs I and II of seedling specimen shown below and answer the questions that follows;



a) Name the parts labelled A, C and D. **(3 marks)**

A_____

C_____

D_____

b)(i) Name the class to which the specimen belongs. **(l mark)**

……

(ii) Give two reasons, using observable features to support your answer in (b) (i) above **(2 marks)**

……

……

(c) Give two functions of the structure labeled D. **(2 marks)**

……

……

d) Explain how the curvature labeled C is formed **(3marks)**

……

……

……

……

e) Name the type of germination exhibited by the seedlings. Give a reason for your answer. **(2marks)**

Type

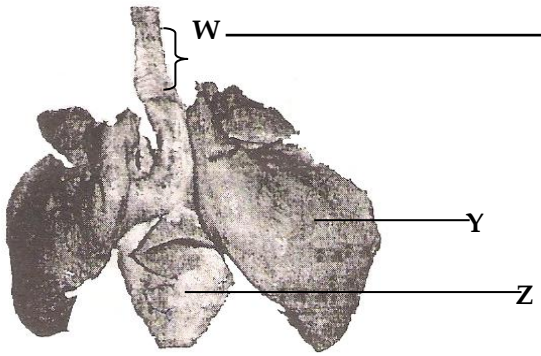
……

Reason

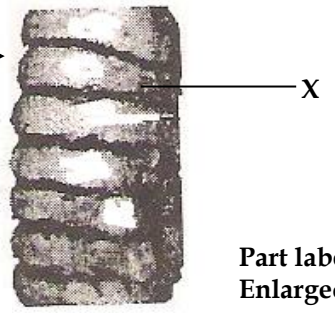
……

……

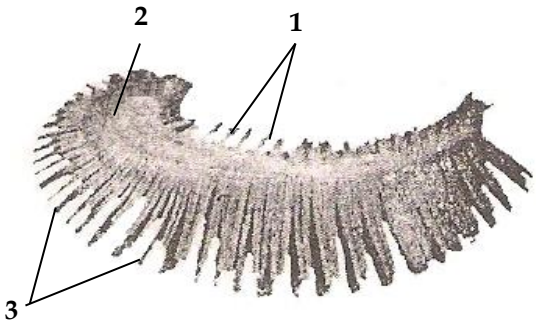
3. Below are photographs labelled J and K of organs obtained from different animals. The organs perform similar functions. Examine them.



Photograph J



Part labelled W
Enlarged



Photograph K

a) Name the phylum to which the organs were obtained from **(1 mark)**

……

b) Identify the organs. **(2 marks)**

J_____

K_____

c) State the function performed by the organs. **(1 mark)**

……

……

d) Name the parts labelled X, Y and Z in **photograph J** **(3 marks)**

X_____

Y_____

Z_____

e) Identify the parts labelled 1, 2 and 3 in **photograph K**. **(3 marks)**

1_____

2_____

3_____

f) Using observable features, state how the parts labelled **1** and **3** you identified in **(d)** above are adapted to their functions **(3 marks)**

……

……

……

……

TOP SCHOOLS MOCKS

BIOLOGY PRACTICAL

TRIAL 8 EXAM

Confidential

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INSTRUCTIONS

Each Candidate will require the following:-

Source of heat

Iodine solution

specimen K –Gymnospermae with cones

SPECIMEN L -Angiospermae with flowers eg *Lantana camara L*

Substance Y -yeast scoop

Solution X- lime water

1-testtube

1 boiling tube

Thermometer

Measuring cylinder

Delivery tube corked with the BT

Water bath

Access to light microscope (label Low power objective as **A** and revolving nose piece as

B

Access *to stain iodine or methylene blue*

Petri dish

Scalpel

White tile

Source of heat

TOP SCHOOLS MOCKS

BIOLOGY

TRIAL 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 10% glucose solution and substance **labeled Y**. Also provided is a solution labeled **X.** You are to investigate the reaction between the glucose solution and **substance Y**. Measure 20.00cm^3 of the glucose solution and transfer it to the boiling tube provided. Transfer all the **substance Y** provided into the solution in the boiling tube. Tightly fit the rubber bung carrying a delivery tube to the boiling tube. Place the boiling tube in a water bath kept between 35 – 40^0 c. Measure about 1.0. cm3 of **solution X** and transfer to a test tube. Connect the delivery tube so that the open end enters the **solution X**. Allow the set – up to stand for about 30 minutes and during this time observe the changes occurring in the boiling tube and in the test tube having **solution X.**

a) Fill the table below **(2 marks)**

Tube	Observations
Boiling Tube	
Test Tube	

b) What conclusions can your draw from your observations in the test tube? (**2 marks)**

……

……

……

c)Name the process that took place in the test tube (**1 mark)**

……

d) Shake the contents of the boiling tube and using a dropper remove a little of the contents. Transfer a drop to a glass slide; add two drops of methylene blue stain. Cover with a cover slip and observe using a microscope of x10 or x15 eye piece lens.

(i) Draw and label the **substance Y** which is in the slide **(2 marks**)

ii) What is the possible identity of **substance Y** **(1 mark)**

……

e) Why was the temperature of the water bath kept between 35 – 38^0c **(1 mark)**

……

……

f) If the experiment was done under the following conditions, suggest, giving reasons the expected results.

(i)Water bath was kept at 100^0c

Observations **(1mark)**	Reasons **(1mark)**

g) From the microscope

(i) Name the part **labeled A.** **(1 mark)**

……

……

(ii) Give the function of part **labeled B.** **(1 mark)**

……

……

h) Name the form in which **substance Y** stores its excess glucose **(1 mark)**

……

……

2. You are provided with **specimen K** and **specimen L**, use them to answer the questions that follows.

a) State with reasons the sub divisions to which the specimens belong.

	Sub division (2 mark)	**Reason** **(2 mark)**
K		
L		

b) State two reasons that proofs specimen **L** is more advanced compared to specimen **K.** in plant Kingdom **(2 marks)**

……

……

c) Name the likely habitat of specimen K and give an adaptation that suit K to its habitat **(2 marks)**

……

……

d) Describe the leaf of specimen L **(3 marks)**

……

……

……

……

e) Study the stem of specimen L.

i) State the structural modification observed **(1mark)**

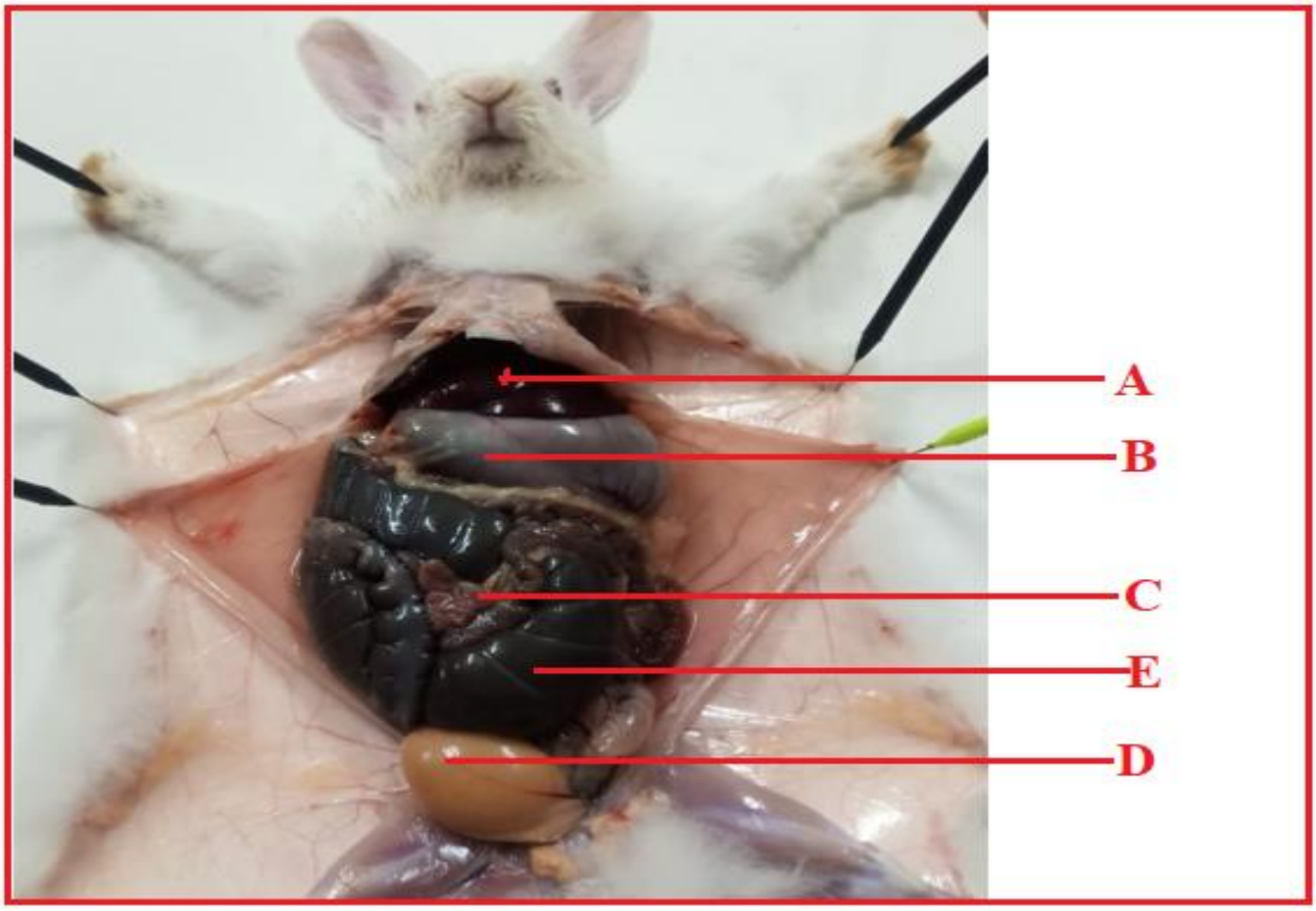
……

ii) What is the importance of this modification? **(1mark)**

……

……

3. You are provided with the following illustration, use it to answer the questions that follow.



a) Name the parts labeled C and E **(2marks)**

……

……

b) Classify the organism into Phylum **(1mark)**

……

……

c) With reason identify the Class of the organism **(2marks)**

Class	Reason

d) State the digestive function of the part labeled B **(2 marks)**

……

……

……

e) State two adaptation of the part labeled C **(4 marks)**

……

……

……

f) State two homeostatis function of structure labeled A **(2marks)**

……

……

……

TOP SCHOOLS MOCKS

BIOLOGY PRACTICAL

TRIAL 9 EXAM

Confidential

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INSTRUCTIONS

Each Candidate will require the following:-

- ***a)*** *L1 – Sodium hydrogen carbonate solution supplied with a dropper.*
- ***b)*** *L2 – starch solution supplied with a dropper*
- ***c)*** *(Olive) oil supplied with a dropper.*
- ***d)*** *Benedict's solution supplied with a dropper.*
- ***e)*** *Iodine solution supplied with a dropper*
- ***f)*** *5 clean test tubes.*
- ***g)*** *Irish potato*
- ***h)*** *Scalpel*
- ***i)*** *Amylase solution*
- ***j)*** *4 labels*
- ***k)*** *Motar and pestle*
- ***l)*** *Distilled water in a wash bottle*
- ***m)*** *A 30cm transparent ruler*
- ***n)*** *10ml measuring cylinder*
- ***o)*** *Means of timing e.g. clock / stop watch.*
- ***p)*** *Means of heating.*
- ***q)*** *Hibiscus flower marked K*

TOP SCHOOLS MOCKS

BIOLOGY

TRIAL 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 olive oil, liquids labeled L_1 and L_2, and an Irish potato. Label test tubes A and B. Place $2cm^3$ of water into each test tube. Add 8 drops of olive oil into each test tube. To test tube A, add 8 drops of liquid L. Shake both test tubes. Allow to stand for 2 minutes.

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

Test Tube A

……

……

Test Tube B

……

……

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

……

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

……

……

(v) Name the digestive juice in humans that has the same effect on oil as liquid L_1 ***(1 mark)***

……

(v) Name the region of the alimentary canal into which the juice is secreted ***(1 mark)***

……

(b)

(i) Label two test tubes C and D place $2cm^3$ of liquid L2 into each test tube. Add a drop of iodine solution into each test tube. Record your observations. ***(1 mark)***

……

……

(ii) Suggest the identity of L_2 ***(1 mark)***

……

(iii) Cut a cube whose sides are $1cm^3$ from the Irish potato. Crush the cube to obtain a paste. Place the paste into a test tube labeled C. add 2cm3 of amylase solution. Leave the set up for at least 30 minutes.

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

C

……

……

D

……

……

(iv) Account for the result in (b)(iii) above ***(2 marks)***

……

……

……

(c) Cut another cube whose sides are 1cm from the Irish potato. Crush the cube. Place the crushed paste into a test tube. Carry out food test with reagents provided. Record your procedure and results.

Procedure: ***(1 mark)***

……

……

……

Results: ***(1 mark)***

……

……

2. You are provided with specimen **K**. Use it to answer the questions that follow

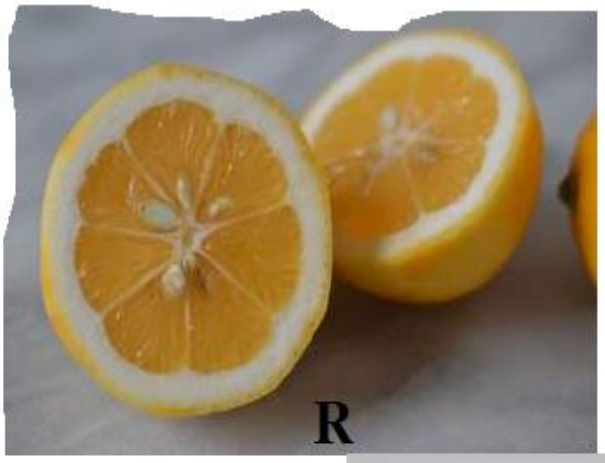
a) Cut the specimen **K** longitudinally. Draw one of the sections **(4marks)**

b) With a reason state the agent of pollination **(1mark)**

……

……

c) The photographs labelled **Q, R**,and **S** are sections of some plant parts.



Q

(i) Name the type of placentation in the specimens shown in photographs **Q, R** and **S**

(3 marks)

Q……

R……

S……

(ii) Giving a reason in each case, name the mode of dispersal of the specimen in photograph **Q** and **S** **(4mark)**

Q

Mode

……

……

Reason

……

……

……

S

Mode

……

……

Reason

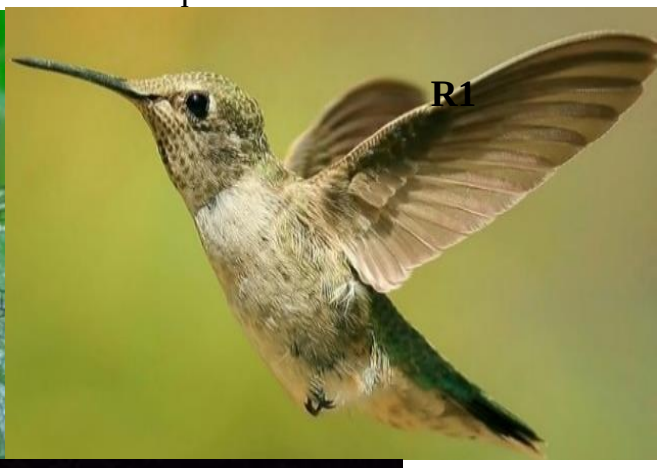
……

……

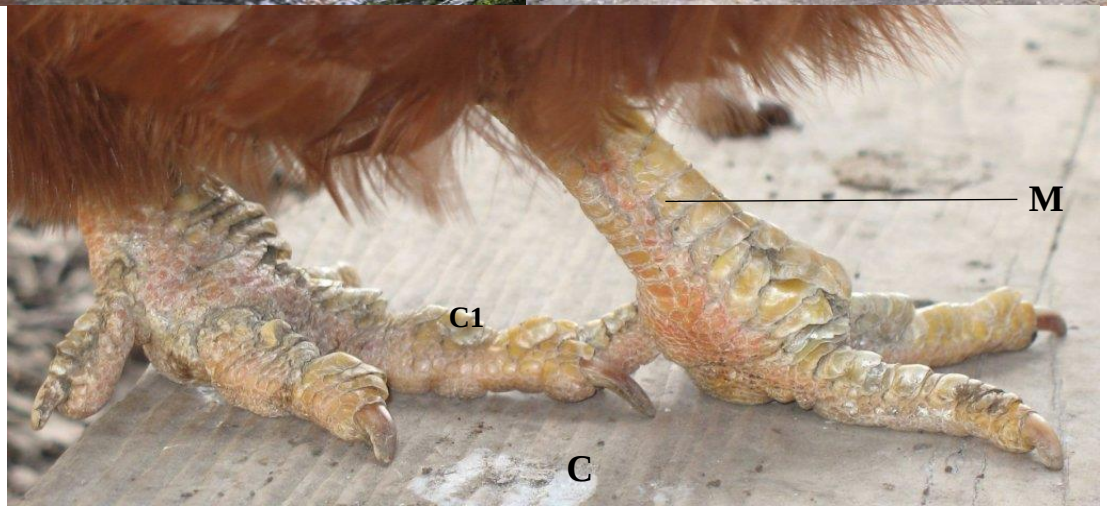
……

2. Study photographs shown below then answer the questions.

Q



R



3. (a) State the type of evolution represented by structures **Q1**, **R1** and **S1**. **(1mk)**

……

b) Explain the type of evolution identified in (a) above. **(1mk)**

……

……

(c) Give the evolution term used to describe structures;

(i) Q1, R1 and **S1.** **(1mk)**

……

(ii)A1, **B1** and **C1.** **(1mk)**

……

d). what type of evolution is illustrated by the limbs (**A1**, **B1** and **C1**)? **(1mk)**

……

e). (i) Name classes for organisms labeled Q**, R** and **S.**

Q……..……**(1mk)**

R……..……**(1mk)**

S……...**(1mk)**

(ii) Give two reasons for placing **S** in the class above **(2mks)**

……

……

……

f) (i) Suggest the diet of animals **B** and **R**.

B……..……**(1mk)**

R……..……...**(1mk)**

(ii) How is beak of animal **B** adapted to its function? **(2mks)**

……

……

……

TOP SCHOOLS MOCKS

BIOLOGY PRACTICAL

TRIAL 10 EXAM

Confidential

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

NOTE: The teacher in **charge of Biology** should **NOT** perform any of the experiments in the same room as the candidates or give any other information related to the experiments to the candidates.

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

INSTRUCTIONS

Each Candidate will require the following:-

- ***a)*** *Specimen **K**. An mature orange (with seeds)-1 per student*
- ***b)*** *Iodine solution.*
- ***c)*** *Mortar and pestle*
- ***d)*** *Stirring rod*
- ***e)*** *Pieces of thread (2 pieces per student)*
- ***f)*** *Benedict's solution*
- ***g)*** *Soaked maize cereal (soaked for 3 days)(specimen **X***
- ***h)*** *Visking tubing (8cm)*
- ***i)*** *Dropper*
- ***j)*** *At least three test tubes*
- ***k)*** *Distilled water*
- ***l)*** *Source of heat (Warm water bath)*
- ***m)*** *Scalpel*

TOP SCHOOLS MOCKS

BIOLOGY

TRIAL 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		

1. You are provided with specimen **X** (Soaked maize grain), Specimen **K**, Benedict's solution, Iodine solution, Pestle and mortar, scalpel and distilled water.

(i) Name the type of fruit represented in **X** above **(1mk)**

……

ii) Give one reason for the above identity **(1mk)**

……

……

(iii) Crush the specimen **X** using pestle and mortar and dissolve in $4cm^3$ of distilled water. Divide the mixture into two equal portions and use them to carry out the following food test. Record your observations in the table below: **(6marks)**

Food Test	Procedure	Observation	Conclusion
Starch			

Reducing sugars			

iv) Account for the observations made in the above table in relation to starch and reducing sugar. **(3mks)**

……

……

……

……

v) Identify the type of placentation in the specimen **K** above **(1mk)**

……

(b) Describe how the above placentation was formed **(2mks)**

……

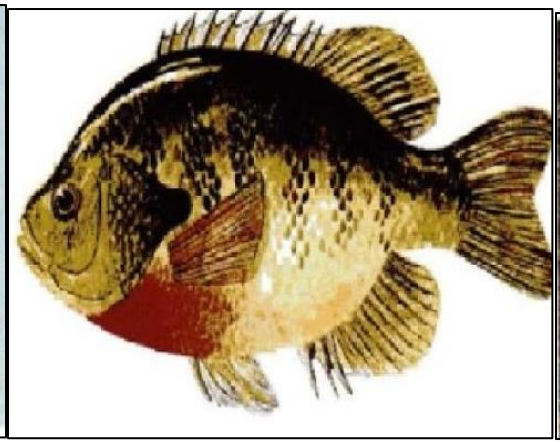
……

……

(c) Using a scalpel, make a transverse section of specimen K. Draw the section of and label its parts **(3mks)**

2. Using the pictures of animals provided below, complete the construction of the dichotomous key by filling the blank spaces. **(13 marks)**

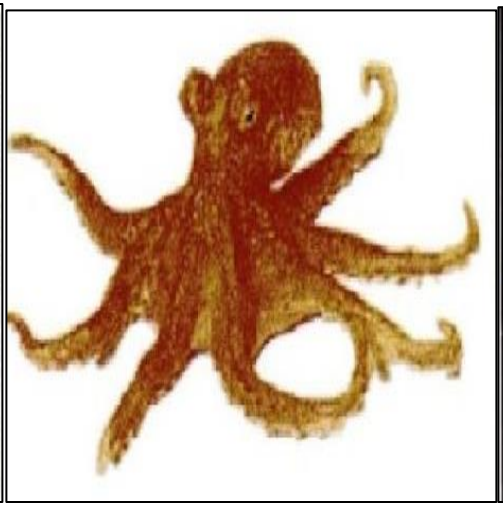
A



B

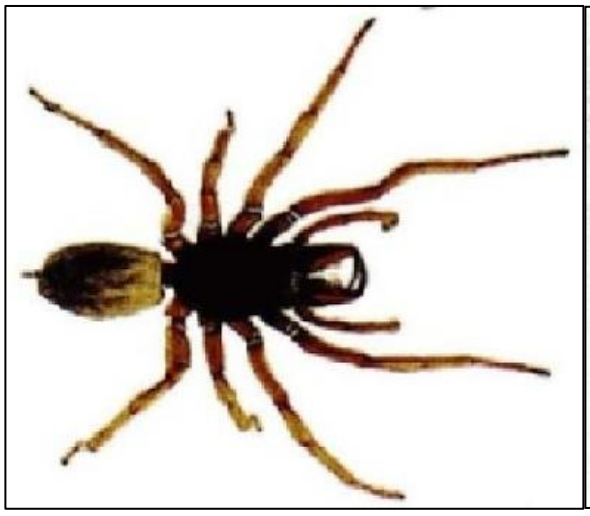
C

D

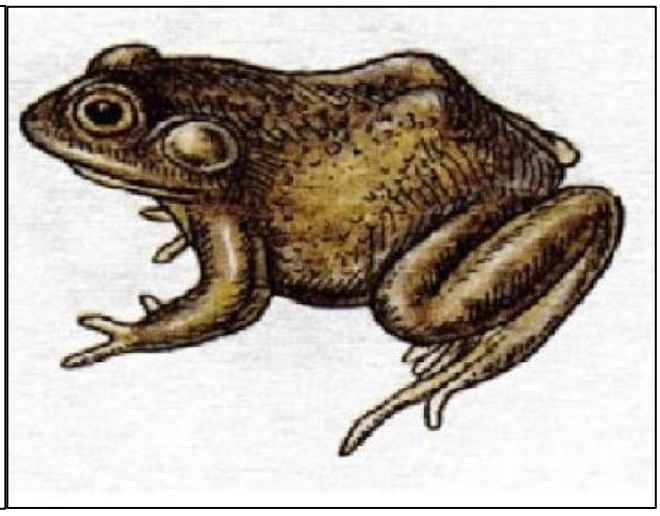


E

F



G



H

- **(a)** Animals with a backbone …… Go to 2

(b) Animals without a backbone …… Go to 5

- **(a)** Animals with wings……..…….... Eagle

(b) Animals without wings …… go to 3

3. (a) Animals which live in water all the time…… go to 4

(b) Animals which live in water some time…….. Frog

4. (a) Animals with fins …… Fish

(b) Animals without fins …….. Turtle

5. (a) Animals with legs ……. Go to 6

(b) Animals without legs …… go to 7

6. (a) Animals with six legs ……... Butterfly

(b) Animals with eight legs ……. Spider

7. (a) Animals with a shell……. Snail

(b) Animals without a shell…….. go to 8

8. (a) Animals with a jelly-like body …… go to 9

(b) Animals without a jelly-like body ……... Starfish

9. (a) Animals with a segmented body …….. Earthworm

(b) Animals without a segmented body ……. Octopus

3. You are provided with starch solution, Iodine solution, Visking tubing, stirring road, 2 pieces of thread, measuring cylinder and a beaker. Tie one end of the visking tubing and pour about 2mls of iodine solution into it. Tie the other end making sure no iodine solution leaks and place the visking tubing into starch solution in the beaker. Leave the set up for about 30 minutes and note the observations

(i) Account for the observations made after 30 minutes **(3mks)**

……

……

……

……

……

(ii) Give the role of the physiological process investigated above in:

a. Reproduction **(1mk)**

……

……

b. Respiration **(1mk)**

……

……

iv) Name two parts in the alimentary canal where starch is digested **(2mks)**

……

……

v) Identify one hormone and one digestive enzyme that stimulates digestion of starch in the parts identified in (iv) above **(2mks)**

……

……

……

……

(vi) What deficiency disease results when an individual lacks starch in their diet? **(1mk)**

……

……

……

……

THE END

THIS IS THE 1st SERIES OF TOP SCHOOLS BIOLOGY MOCKS PRACTICAL EXAMINATIONS TRIALS

SERIES 2 AVAILABLE

TO ALL KCSE CANDIDATES;

SUCCESS IN YOUR KCSE EXAMS.

BY; MWALIMU AGENCY TEAM