# KCSE 2024 FINAL PREDICTION

# BIOLOGY PRACTICAL

## (PREDICTIONS TRIALS 1-10)

***Final series of Possible Questions expected to be examined in the forthcoming Final Exams. This provides a framework and means of illumination to guide our candidates in preparation for the KCSE Examinations scheduled for November 2024***

*The following are Questions to expect in KCSE 2024.*

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## CONFIDENTIAL!

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

# ALL THE BEST IN KCSE!

# KCSE FINAL PREDICTION

# BIOLOGY PRACTICAL

# TRIAL 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:-

### QUESTION 1

You are provided with the following materials;

- *Specimen **A** –Ripe banana*
- *Scalpel*
- *50ml beaker*
- *Glass rod*
- *8cm visking tubing*
- *2 pieces of strings*
- *20ml distilled water in a wash bottle*
- *100ml beaker*
- *10ml Iodine solution*

# KCSE FINAL PREDICTION

# 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;

- *Specimen **A***
- *Scalpel*
- *50ml beaker*
- *Glass rod*
- *8cm visking tubing*
- *2 pieces of strings*
- *20ml distilled water in a wash bottle*
- *100ml beaker*
- *10ml Iodine solution*

**1.** You are provided with a specimen labeled **A**. Make a transverse section of the specimen.

**(a)** Draw and label the section **(3mks)**

**(b)** What type of fruit is specimen A? **(1mk)**

……

……

**(c)** Slice off about 2cm thick disc from the specimen. Peel it. Place the piece into a beaker and mash it into a paste using a glass rod. Add 20ml of distilled water and stir. Tie one end of the transparent tubing provided. Decant the extract into the tubing and tie the other end tightly, ensuring there is no leakage.
Immerse the tubing with its contents in a 100ml beaker containing Iodine solution for 20 minutes.

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

| | Extract inside visking tubing | Iodine solution outside the visking tubing |
|---|---|---|
| Before the experiment | | |
| After the experiment | | |

**(i)** Explain the results obtained from c(i) above. **(5mks)**

……

……

……

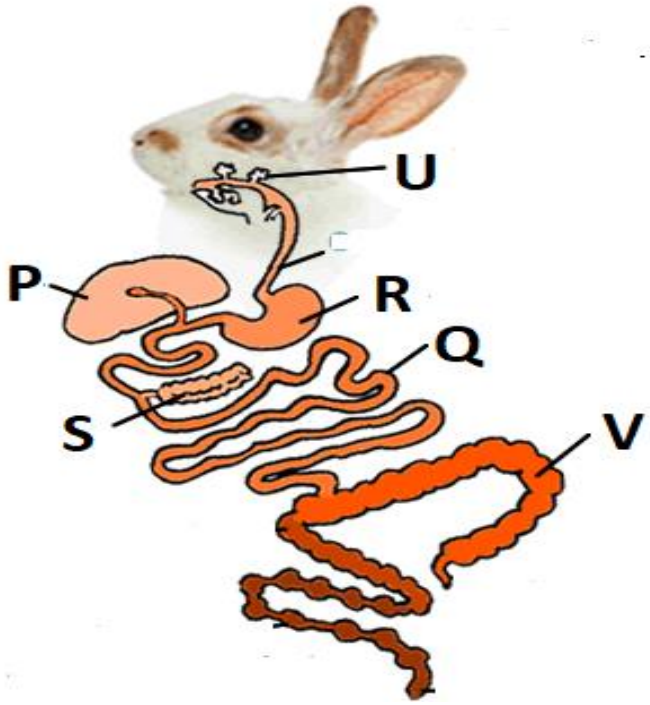
……

……

……

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





**(a)** With **observable** reasons identify the class of the specimen in the photograph .

**(i)** Class……..**(1mk)**

**(ii)** Reasons **(2mks)**

……

……

……

**(b)** (i) Name the structures labeled **P,Q,R,S** **(4mks)**

**(ii)** State the function of the parts labeled **(2mks)**

**U** ……

……

**V** ……

……

**(c)** Study the photographs below depicting plants growing in different habitats.




**(i)** Identify the habitats in which they are found **(2mks)**

**Y** ……

**Z** ……

**(ii)** State the significance of the following structures found in the specimens shown above **(2mks)**

**R** ……

……..

**S** ……...

……

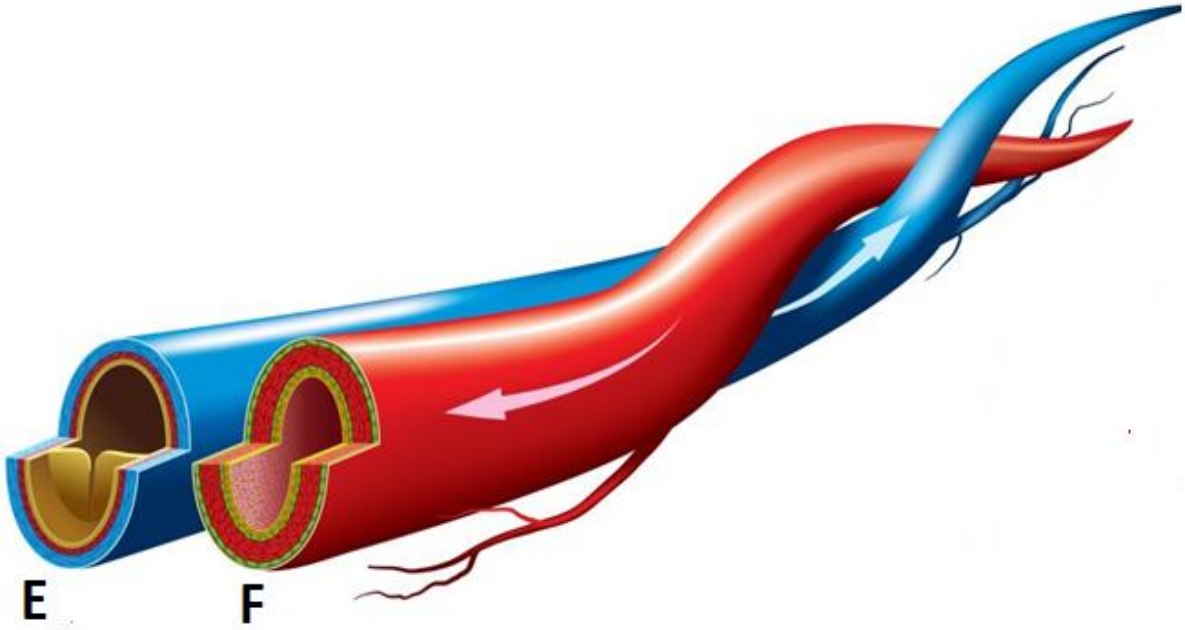
**3.** Below are photographs showing some observable features of animals




**(a)** Using the features in the order given below, construct a dichotomous key that can be used to identify the specimens in the photographs. **(10mks)**

- Presence or absence of backbone
- Presence or absence of wings
- Presence or absence of scales
- Presence or absence of pouch
- Bipedal or quadripedal

**(b)** Study the photographs below showing blood vessels in man.




**(i)** Using **observable features** identify the blood vessels **(2mks)**

**E** ……

**F** ……

**(ii)** Using **observable features only**, give two differences between the two blood vessels **(2mks)**

| **E** | **F** |
|---|---|
| | |
| | |

# KCSE FINAL PREDICTION

# BIOLOGY PRACTICAL

# TRIAL 2 PRACTICAL

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## INSTRUCTIONS

### Each Candidate will Require the following:-

- Specimen H (Lantana twig with flowers/fruits)
- Irish potato
- Specimen K (creeping grass complete with roots and internodes)
- Specimen P (medium sized Avocado fruit)
- 5mls of Dilute Hydrogen peroxide solution
- 5mls of Solution K (0.5 M Hydrochloric acid)
- 5mls of Solution L (Distilled water)
- 5mls of Solution M (0.5 M sodium hydroxide solution)
- Access to Washing up solution (Glycerine)
- Stop watch
- Measuring cylinder
- Dropper
- Glass rod
- White tile
- Scapel
- 4 test tubes in a test tube rack
- Iodine solution
- Distilled water in a wash bottle
- Each student should carry a clear ruler

# KCSE FINAL PREDICTION

# BIOLOGY

## TRIAL 2 PRACTICAL

**TIME: 1 ¾ HOURS**

**NAME…… INDEX NO……..…**

**SCHOOL…….. SIGN……**

**DATE……....**

### INSTRUCTIONS TO CANDIDATES

- Write your name, admission number, date, and signature and school name in the spaces provided.
- Answer **ALL** the questions in the spaces provided in the question paper
- You are NOT allowed to start working with the apparatus for the first 15 minutes of the 1 ¾ 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 Irish potato tuber; dilute Hydrogen peroxide solution, washing up solution, solutions labelled K, PH 4, solution labelled L of PH 7, and solution labelled M of PH 9. You are also provided with 10mI measuring cylinder, white tile, glass rod, scalpel, stop watch, test tubes in a test tube rack.

Peel the potato tuber and cut a piece measuring lcm3. Crush it on a white tile using the glass rod to obtain a paste. Divide the paste into 3 portions and use them as follows.

**i)** Put 2cm$^3$ of solution K into a 10ml measuring cylinder. Add one portion of the potato paste into the cylinder containing solution K. Read and record the volume of the mixture in the table below. Add one drop of the washing up solution. Add lcm$^3$ of hydrogen peroxide solution into the mixture and immediately start a stop watch. At the end of 2minutes read the mark to which the foam rises and record in the table below. Clean and rinse the measuring cylinder with distilled water.

**ii)** Put 2cm$^3$ of solution L into a 10ml measuring cylinder. Add the second portion of the potato paste into the cylinder containing solution L. Read and record the volume of the mixture in the table below. Add one drop of the washing up solution. Add lcm$^3$ of hydrogen peroxide solution into the mixture and immediately start a stop watch. At the end of 2minutes read the mark to which the foam rises and record in the table below. Clean and rinse the measuring cylinder with distilled water.

**iii)** Put 2cm$^3$ of solution M into a 10ml measuring cylinder. Add the third portion of the potato paste into the cylinder containing solution M. Read and record the volume of the mixture in the table below. Add one drop of the washing up solution. Add lcm$^3$ of hydrogen peroxide solution into the mixture and immediately start a stop watch. At the end of 2minutes read the mark to which the foam rises and record in the table below.

**a)** Complete the table below by calculating the volume of the foam produced in each of the solutions using the data obtained in **(i), (ii) and (iii)** **(3mks)**

| | **SOLUTION K** | **SOLUTION L** | **SOLUTION M** |
|---|---|---|---|
| Volume of the solution + Potato portion | | | |
| Volume of the solution + potato portion + foam | | | |
| Volume of the foam | | | |

**b)** Explain the observation made when hydrogen peroxide was added to the mixture **(2mks**

……

……

……

**c)** Account for the difference in the volume of the foam that was produced in solution K and solution M **(2mks)**

……

……

……

**d)** Cut a piece of potato measuring lcm$^3$ from the remaining potato .Use the reagent provided to test for the food substance **(3mks)**

| Test | Procedure | Observation | Conclusion |
|---|---|---|---|
| | | | |

**2.** You are provided with photographs of specimen Q and N together with actual specimens H, K and P. specimen H is a complete plant while K is a portion of a different plant. Observe the specimens and the photographs and use them to answer the questions that follows.

**a)** State two observable differences between the leaves of H and K. **(2mks)**

……

……

**b)** Explain how the stem of specimen H adapts the plants to photosynthesis **(2mks)**

……

……

……

**c)** State the ecological importance of specimen H **(1mk)**

……

……

**d)** Describe how specimen K is adapted to its habitat **(2mks)**

……

……

……

**e)** Explain the consequences of spilling common salt to the soil in which specimen H is growing. **(2mks)**

……

……

……

**f)** With a reason identify the subdivision from which specimen H and K belong **(2mks)**

……

……

……

**g)** Cut a longitudinal section of specimen P. using the observable features.

**i)** Identify the type of placentation **(1mk)**

……

……

**ii)** With a reason classify the type of fruit to which it belongs. **(2mks)**

……

……

……

**h)** Use the photographs of Q and N to complete the table below **(4 mks)**

PHOTOGRAPH N

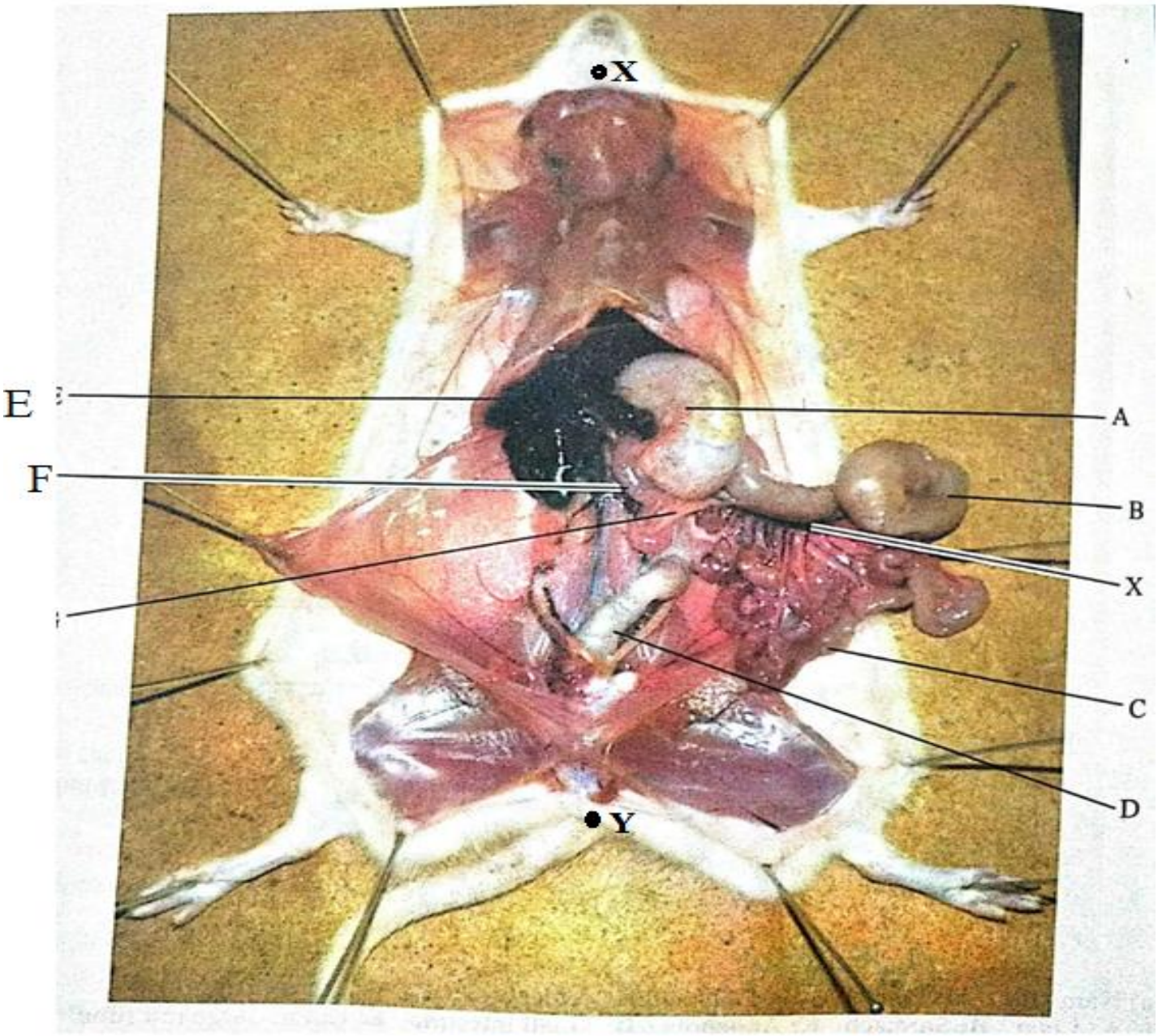


PHOTOGRAPH Q



| SPECIMEN | MODE OF DISPERSAL | ADAPTIVE FEATURE |
|---|---|---|
| Q | | |
| N | | |

**3.** Below is a photograph of a dissected rat with abdominal organs spread out. Examine it




**a)** State two characteristics that distinguish the dissected animal into its taxonomic class. **(2mks)**

……

……

……

**b)** Name the parts labelled **(3mks)**

**i) B**

**ii) C**

**iii) F**

**c)** State

i) Two functions of part labelled A **(2mks)**

……

……

……

**ii)** The function of D **(1 mk)**

……

……

**d)** Other than homeostasis and excretion state two functions of structure E **(2mks)**

……

……

……

**e)** Given the magnification of the specimen in the photo as X 0.67, calculate the length of the rat from X to Y **(2mks)**

……

……

……

……

……

# KCSE FINAL PREDICTION

# BIOLOGY PRACTICAL

# TRIAL 3 PAPER 3

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## INSTRUCTIONS

### Each Candidate will Require the following:-

- *25ml bicarbonate indicator*
- *Lime water*
- *A drinking straw*
- *2 test tubes*
- *10ml measuring cylinder*
- *A boiling tube*
- *Dilute hydrochloric acid*
- *Dilute sodium hydroxide*

# KCSE FINAL PREDICTION

# BIOLOGY

## TRIAL 3 PRACTICAL

**TIME: 1 ¾ HOURS**

**NAME…… INDEX NO……..…**

**SCHOOL…….. SIGN……**

**DATE……....**

### INSTRUCTIONS TO CANDIDATES

- Write your name, admission number, date, and signature and school name in the spaces provided.
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|---|---|---|
| | 1 | |
| | 2 | |
| | 3 | |
| TOTAL SCORE | | |

**1.(a)** Place 2ml of bicarbonate indicator in a clean test tube. Add dilute hydrochloric acid drop by drop and shake after each drop till there is a permanent color change.

**(i)** State the resulting color **1mk**

……

**(ii)** To the mixture obtained above, now add sodium hydroxide solution dropwise until there is a permanent color change. Record your observations **1mk**

……

……

**(iii)** From your observations in a) i) and a) ii) above, what is the nature of the bicarbonate indicator **1mk**

……

**(b)** Place 10ml of a fresh bicarbonate indicator in boiling tube. Using a drinking straw, bubble air through the bicarbonate indicator until there is color change

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

……

……

**(ii)** What does the color obtained in b) i) above suggest about the nature of the gas breathed out **1mk**

……

**c)** Rinse the measuring cylinder and use it to place 2ml of lime water solution in a clean test tube. Rinse the drinking straw in (b) above and use it to bubble air through lime water solution

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

……

……

**(ii)** Suggest the identity of the gas that give rise to the observations above **1mk**

……

**(d)** **(i)** Name the physiological process in cells that leads to formation of gas named in (c)( ii) above **1mk**

……

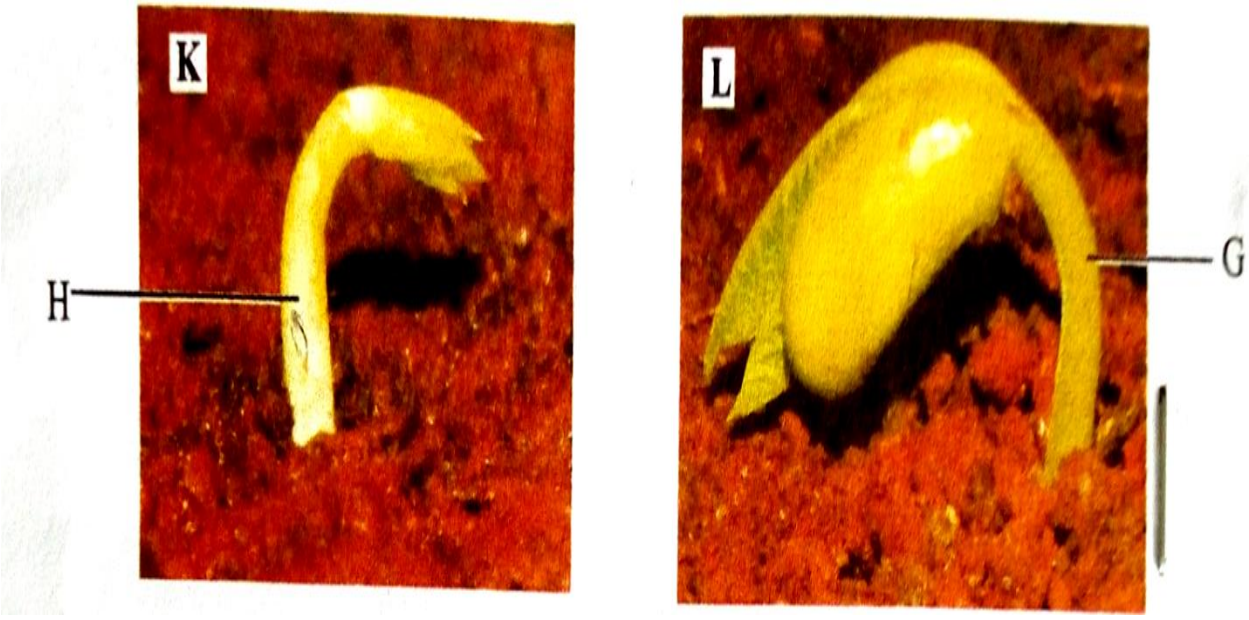
**(ii)** Write down a word equation for the process named in (d) (i) above **1mk**

……

**(iii)** What is the importance of the identified process in cells of living organisms **1mk**

……

**2.** Below are photographs of two seedlings labeled K and L. Examine them.




**a)** Given that the two plants belongs to the same class, name the class and give a reason based on the observable features in any of the two seedlings or both. **2mks**

Class……

Reason(s) ……

……

**b)** i) State giving a reason, the type of germination that occurs in each of the two seedlings **4mks**

**K**……

……

**L**……

……

**ii)** Explain how the two types of germination you have stated in (b) (i) above occur **2mks**

**K**……

……

**L**……

……

**c)** Name the parts labelled H and G on the seedling **2mks**

……

……

**d)** As germination progresses, both seedlings straightens. Explain how this occurs. **4mks**

……

……

……

……

**e)** Name the type(s) of root system that will develop in the two seedlings **1mk**

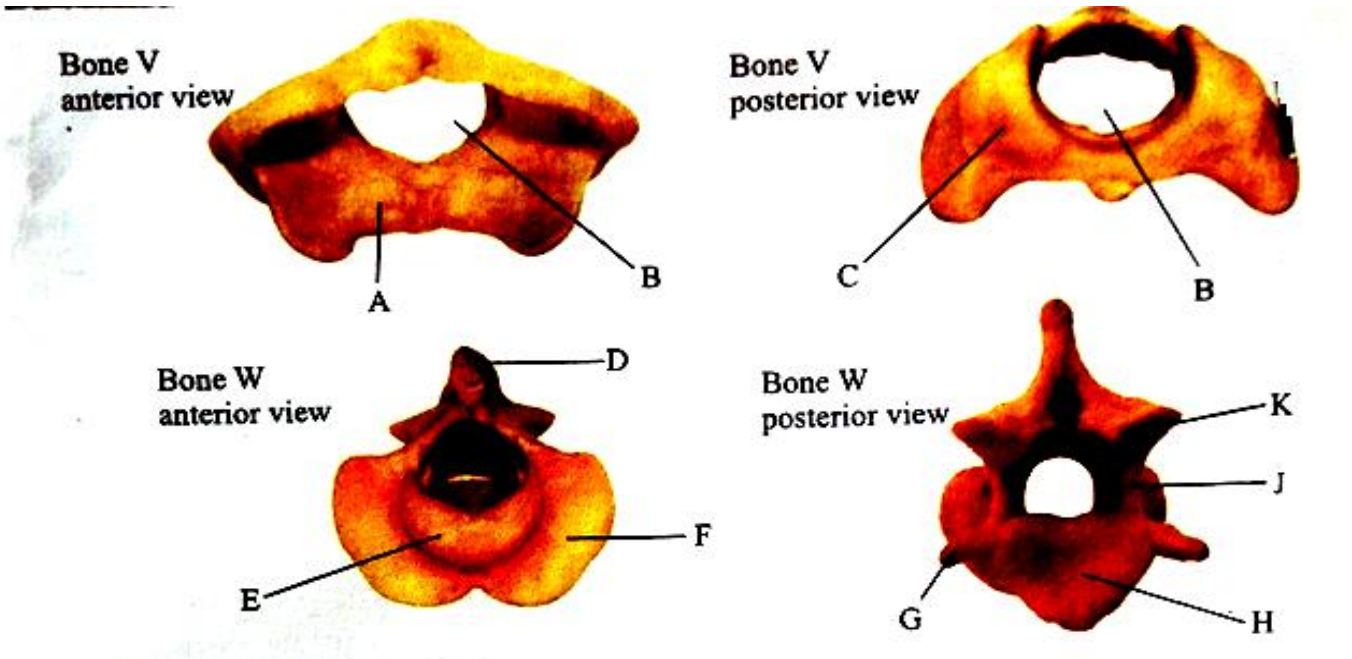
……

**f)** State another observation that will be made as seedling L straightens **1mk**

……

……

**3.** The photographs below are specimens from the same animal of two different bones each shown in two views. Examine them.




**a)** Identify the two specimens **2mks**

Specimen

**V**……

**Specimen**

**W**……

**b)** Give four observable differences between bones V and W **4mks**

| **Bone V** | **Bone W** |
|---|---|
| | |
| | |
| | |
| | |

**c)** Name the structure that articulates with part labeled A **1mk**

……

**d)** State two roles of opening labeled B **2mks**

……

……

**e)** Name the part labelled E and state its role **2mks**

Name……

Role……

……

**f)** Which of the labelled part(s) are used for articulation with adjacent vertebra **1mk**

……

**g)** State a common role of the parts labelled H and J **1mk**

……

……

**h)** Which of the labeled part(s) is(are) used for muscle attachment **1mk**

……

# KCSE FINAL PREDICTION

# BIOLOGY PRACTICAL

# TRIAL 4 PAPER 3

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## INSTRUCTIONS

### Each Candidate will Require the following:-

- ***Specimen K*** *-A mature onion bulb*
- ***Solution P*** *-distilled water in a beaker*
- ***Solution Q*** *-concentrated sodium chloride solution in a petri dish/beaker*
- *Empty petri dish*
- *A scalpel*

# KCSE FINAL PREDICTION

# BIOLOGY

## TRIAL 4 PRACTICAL

**TIME: 1 ¾ HOURS**

**NAME…… INDEX NO……..…**

**SCHOOL…….. SIGN……**

**DATE……....**

### INSTRUCTIONS TO CANDIDATES

- Write your name, admission number, date, and signature and school name in the spaces provided.
- Answer **ALL** the questions in the spaces provided in the question paper
- You are NOT allowed to start working with the apparatus for the first 15 minutes of the 1 ¾ 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.
- 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** and solutions labelled **P** and **Q**. Cut the specimen into two halves. From one half remove the outer and an inner leaf of the specimen.

**a)** State two observable features of the outer and inner leaves of the specimen.

**(i)** outer leaf **(2mks)**

……

……

**(ii)** Inner leaf **(2mks)**

……

……

**b)** State a function of the inner and outer leaves of the specimen.

**(i)** Outer leaf **(1mrk)**

……

……

**(ii)** Inner leaf **(1mrk)**

……

……

**c)** Name the type of reproduction exhibited by specimen **K** **(1mrk)**

……

Using the other half of specimen **K**, remove some of the inner leaves. Cut the leaves along their lengths into nine strips. Each strip should be about 2mm wide. Place three strips into the solution labelled **P**. Place another three strips into the solution labelled **Q** and leave the last three strips in a petri dish labelled **R**. Allow the experimental setups to stand for 10 minutes.

**d)** Use your fingers to feel the texture of the strips. Record your observations.

**(i)**Strip in solution P **(1mrk)**

……

……

(i) Strip in solution Q **(1mrk)**

……

……

**e)** Account for the texture of strips in solution Q **(3mrks)**

……

……

……

**f)** Suggest the concentration of solution P in relation to the cell sap in the strips of the specimen **(1mrk)**

……

……

**g)** Give a reason for your answer in (**f**) above **(1mrk)**

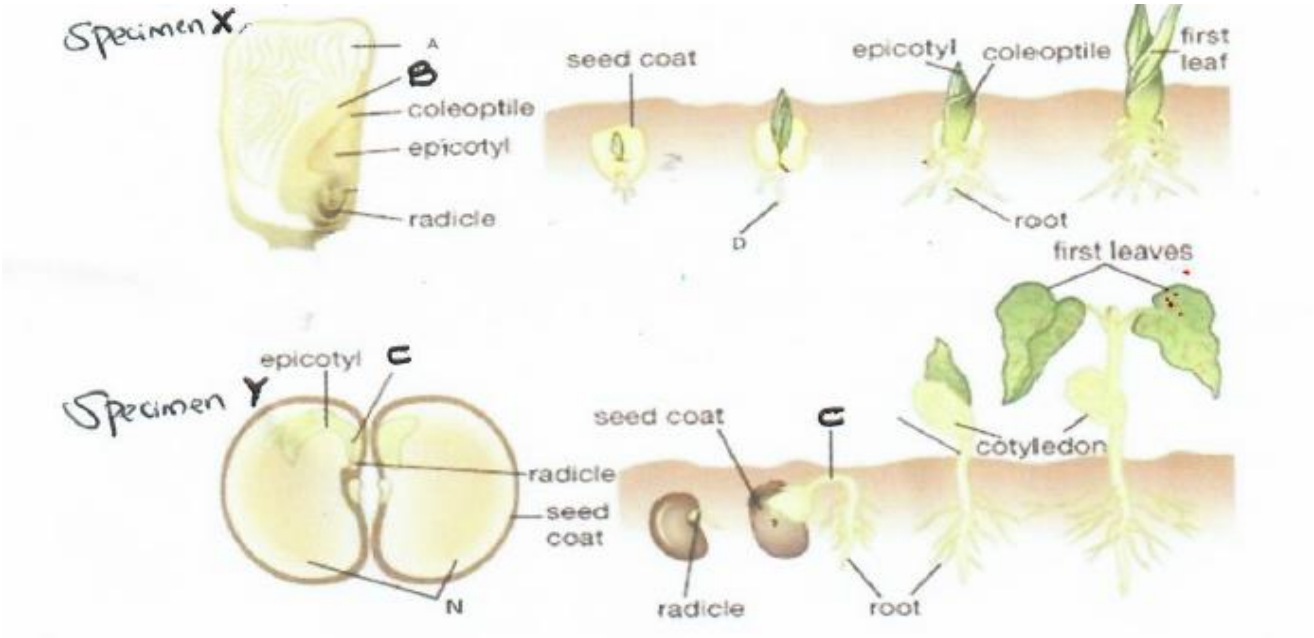
……

……

**h)** State the aim of the setup R **(1mrk)**

……

**2.** The diagram below illustrates photographs of plants undergoing a certain process. Study them carefully and answer the questions that follow.




**i)** Name the process illustrated on the photograph. **(1mrk)**

……

**ii)** State two differences in the way the process occurs as illustrated in X and in Y.**(2mrks)**

……

……

……

**b) i)** State two roles of part C in the process illustrated above. **(2mrks)**

……

……

**ii)** State two external factors that are necessary for the process above to take place.**(2mrks)**

……

……

c) Name the part labeled B and give its function.

Name: **(1mrk)**

Function: **(1mrk)**

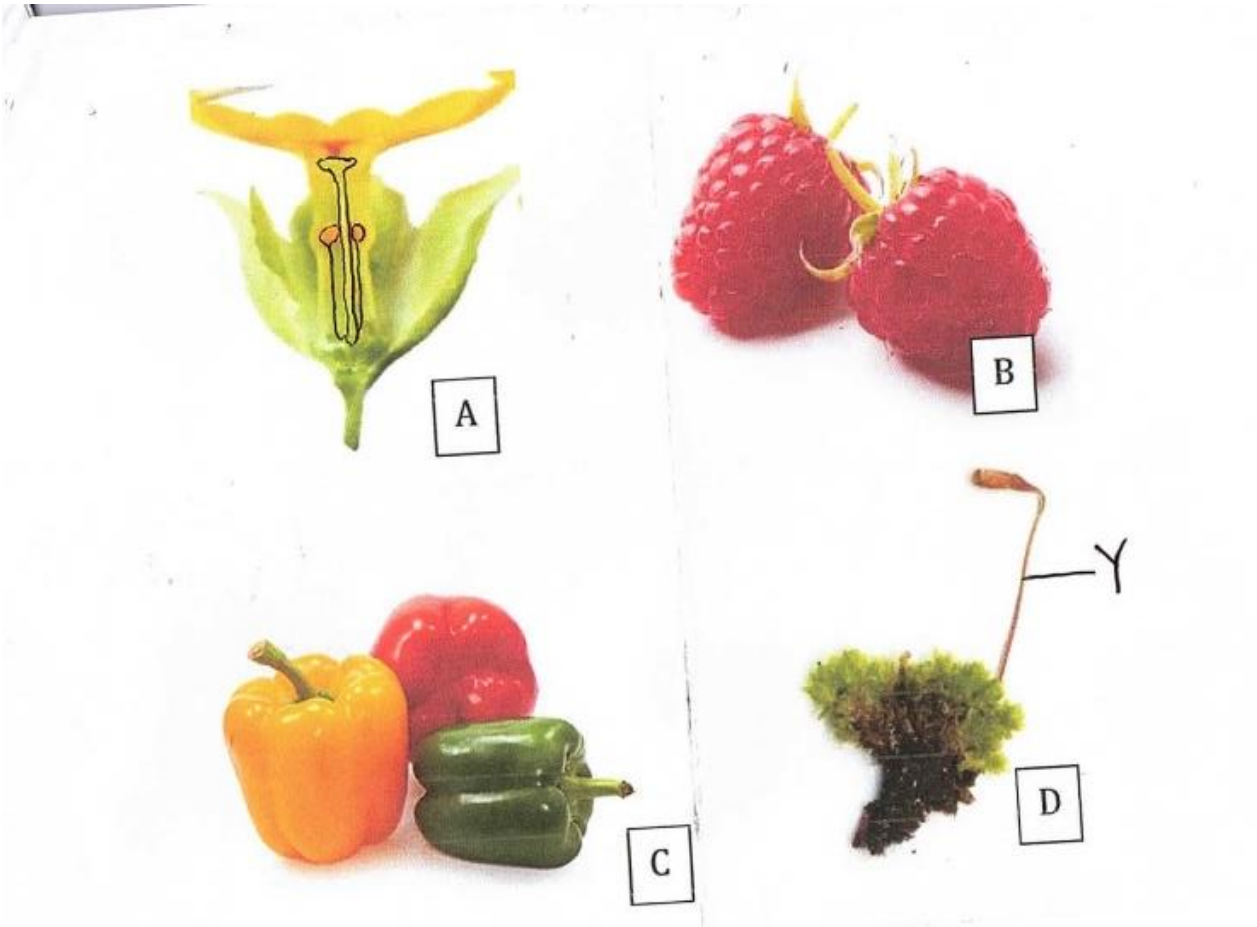
……

……

**d)** Using observable features only, name the classes to which the specimen X and Y belong, giving one reason in each case. **(4mrks)**

| SPECIMEN | CLASS | REASONS |
|---|---|---|
| X | | |
| Y | | |

**3.** Study the photographs below of specimen. A, B, C and D and then answer the questions that follows.



**a)** Name the condition exhibited in A which hinders self- fertilization. **(1mrk)**

……

**b)** Explain how the above condition hinders self-fertilization. **(2mrk)**

……

……

……

**c)** With reasons give the term given to gynoecium B and C

**(i)** **B**…… **(1mrk)**

Reason **(1mrk)**

……

……

**(ii)** **C** ……..**(1mrk)**

Reason **(1mrk)**

……

……

**d) i)** State the division where plant in photograph D belong and give reason for your answer.

Division ……..**(1mrk)**

Reason **(1mrk)**

……

……

**ii)** State the type of nutrition exhibited by specimen D. **(1mrk)**

……

……

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

……

……

**iv)** Give the function of the structure labelled Y. **(1mrk)**

……

……

# KCSE FINAL PREDICTION

# BIOLOGY PRACTICAL

# TRIAL 5 PAPER 3

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## INSTRUCTIONS

### Each Candidate will Require the following:-

1. Pestle and mortar
2. Specimen Q: LIVER
3. Specimen R : Banana/ raw :3 students can share 1
4. Measuring cylinder
5. Ruler
6. 20ml Hydrogen peroxide (solution X)
7. Source of heat
8. 2 Boiling tubes
9. 4 test tubes
10. Distilled water
11. Labels
12. Stop watch

# KCSE FINAL PREDICTION

# BIOLOGY

## TRIAL 5 PRACTICAL

**TIME: 1 ¾ HOURS**

**NAME…… INDEX NO……..…**

**SCHOOL…….. SIGN……**

**DATE……....**

### INSTRUCTIONS TO CANDIDATES

- Write your name, admission number, date, and signature and school name in the spaces provided.
- Answer **ALL** the questions in the spaces provided in the question paper
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| SECTION | QUESTION | CANDIDATES SCORE |
|---|---|---|
| | 1 | |
| | 2 | |
| | 3 | |
| TOTAL SCORE | | |

**1.** You are provided with a nutritional supplement labelled S, distilled water and a boiling tube. Put about 6ml of the distilled water in the boiling tube and add the nutritional tablet to dissolve it. Use the reagents provided to find out the food substances present in the tablet**.** **(12 mks)**

| **Food substance** | **Procedure** | **Observation** | **Conclusion** |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

**2.** a) (i) You are provided with a pestle, mortar, scapel, **specimen Q** and **R**. Cut from each a cube, each measuring 1cm by 1cm. put them each in a different test tube having 10mls of solution **X**. Record the observations in the table below? **(2 marks)**

| Specimen | Observation |
|---|---|
| Specimen **Q** | |
| Specimen **R** | |

**(ii)** Account for the observations in the experiment involving specimen **Q** and **R**?**(2 mks)**

……

……

……

……

**b)i)**Using the remaining portion of **specimen Q**, Cut 2 other pieces measuring 1cm by 1cm,Crush them separately to form a paste and put them in boiling tubes labelled **A** and **B**. To the paste in boiling tube labelled **A**, add 5mls of solution **X**. Record the observation in the table below.

To the paste in boiling tube labeled **B** add 10mls of distilled water and boil for 5 minutes then allow it cool then add 5mls of solution **X**. Record the observation in the table below.

**(2 marks)**

| BOILING TUBE | OBSERVATION |
|---|---|
| A | |
| B | |

**ii)** Account for the observations in the experiment involving boiling tube **A** and **B(4 mk**

Boiling tube **A**

……

……

Boiling tube **B**

……

……

**iii)** Name the biological substance being investigated and its significance to the living tissues **(2 marks)**

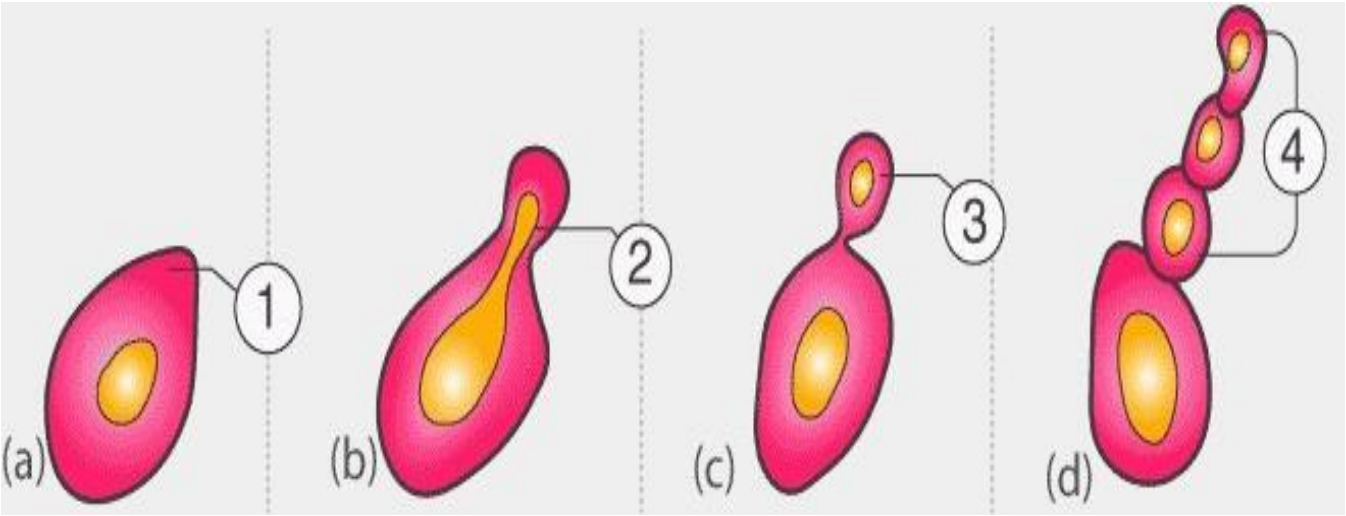
Biological substance……

Significance……

**iv)** Name the factor being investigated in question 2(b) above **(1mark)**

……

**3.** The diagrams below show a method of reproduction.




**(a).**Name the mode of reproduction above and give an example of organism where it occurs . **(2mks)**

……

……

**(b).**Briefly explain how the process occurs **(4mks)**

……

……

……

……

**(c)** Study the following photograph and answer the questions that follow



**(d)**Describe the features of the above photograph with respect to the following **(3mks)**

**(i)** Androecium

……

……

……

**(ii)** Gynoecium **(3mks)**

……

……

……

**(e) (i)**Suggest the agent of pollination of the flower **(1mk)**

……

**(ii)**Explain how it is adapted to pollination agent you have named in (b)(i)above **(2mks)**

……

……

……

# KCSE FINAL PREDICTION

# BIOLOGY PRACTICAL

# TRIAL 6 PAPER 3

## 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:-

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

# KCSE FINAL PREDICTION

# BIOLOGY

## TRIAL 6 PRACTICAL

**TIME: 1 ¾ HOURS**

**NAME…… INDEX NO……..…**

**SCHOOL…….. SIGN……**

**DATE……...**

### INSTRUCTIONS TO CANDIDATES

- Write your name, admission number, date, and signature and school name in the spaces provided.
- Answer **ALL** the questions in the spaces provided in the question paper
- You are NOT allowed to start working with the apparatus for the first 15 minutes of the 1 ¾ 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.
- 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)***

……

**(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)***

……

……

……

**(b)** 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)**

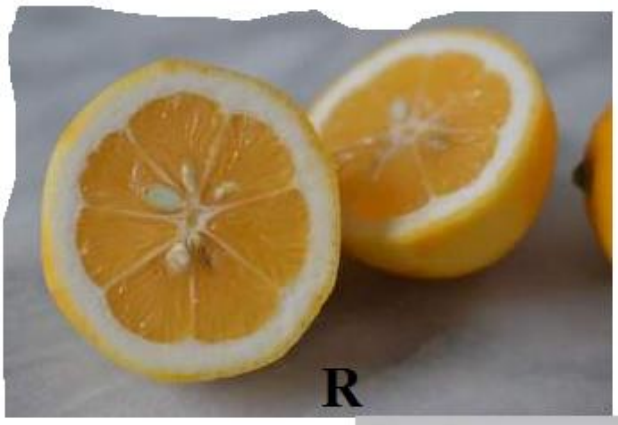
**b)** With a reason state the agent of pollination **(1mark)**

……

……

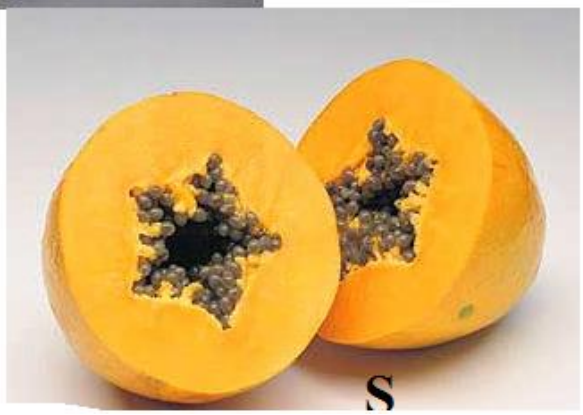
……

**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

……

……

……

**3.** Study photographs shown below then answer the questions.

**Q**



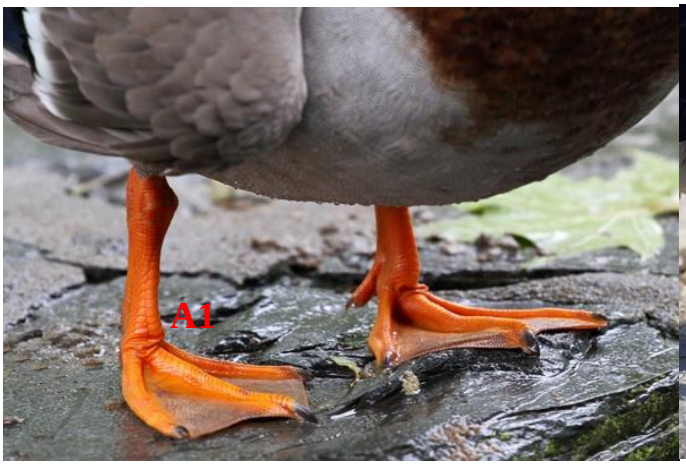

**R**

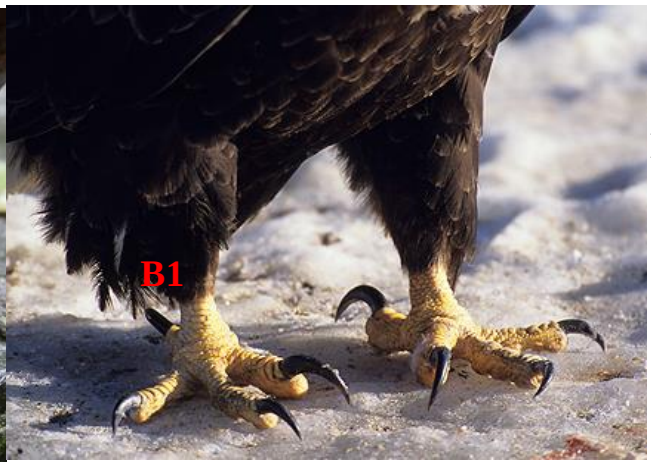



**S**



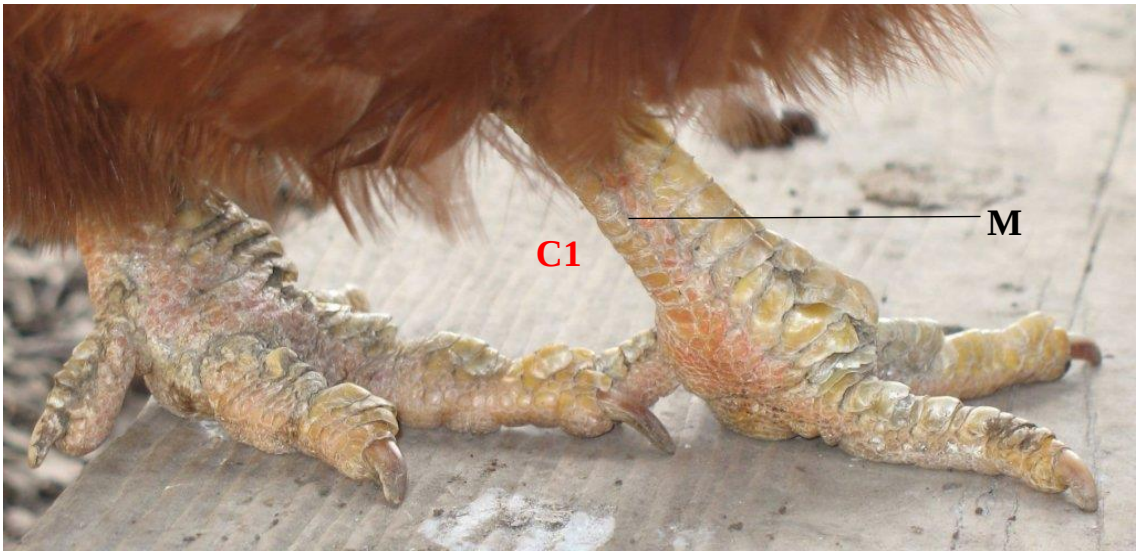

**A**




**B**

**C**



**(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)**

……

……

……

……

# KCSE FINAL PREDICTION

# BIOLOGY PRACTICAL

# TRIAL 7 PAPER 3

## Confidential

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

## INSTRUCTIONS

### Each Candidate will Require the following:-

Each candidate should be provided with the following.

1. 4 test tube.
2. Test tube rack.
3. 2 boiling tube.
4. 2 droppers.
5. 5 spatula of powder Q.
6. 5 spatula of powder R.
7. 1 measuring cylinder.
8. 6 labels.

Access to the following

1. 1% copper (II) sulphate.
2. Sodium hydroxide.
3. Iodine solution.

**NB:** powder Q is wheat flour

Powder R is SIFTED maize flour.

# KCSE FINAL PREDICTION

# BIOLOGY

## TRIAL 7 PRACTICAL

**TIME: 1 ¾ HOURS**

**NAME…… INDEX NO……..…**

**SCHOOL…….. SIGN……**

**DATE……....**

### INSTRUCTIONS TO CANDIDATES

- Write your name, admission number, date, and signature and school name in the spaces provided.
- Answer **ALL** the questions in the spaces provided in the question paper
- You are NOT allowed to start working with the apparatus for the first 15 minutes of the 1 ¾ 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 powder Q and powder R. Measure 10ml of distilled water and put it in a boiling tube. Put powder Q in the boiling tube, shake and make a solution. Label it solution Q. Measure 10ml of distilled water and put it in another boiling tube. Put powder R in the boiling tube, shake and make a solution. Label it solution R.

**a)** Using the reagents provided carryout food tests on the two solutions to determine the food present in the two solutions. **( 8mks)**

| Solution | Food | Procedure | Observation | Conclusion |
|---|---|---|---|---|
| **Q** | | | | |
| | | | | |
| **R** | | | | |
| | | | | |

**b (i).** Which of the two food substances should be included in a diet to protect a child suffering from kwashiorkor? **(1mk)**

……

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

……

……

**C (i)** Name two enzymes in the human body which digest the food substances found in the powder. **(2mks)**

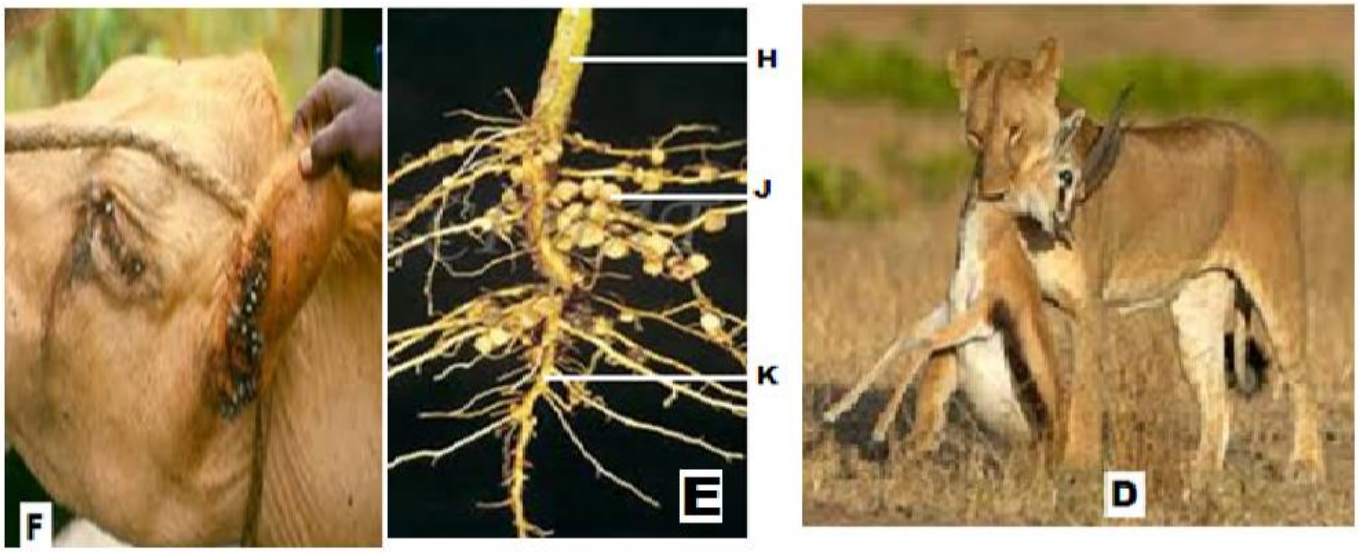
……

……

**ii)** State the organ from which each enzyme you have stated in c (i) acts. **(2mks)**

……

**2.** Observe the three photographs carefully and answer the questions that follow




**a)** Identify the structures labeled H, J, and K **(3mks)**

……

……

……

**b)** Suggest the group of plant from which the root is obtained **(1mk)**

……

**c)** Explain the relationship found at point J **(4mks)**

……

……

……

……

**d)** Explain how the relationship benefits a farmer. **(2mks)**

……

……

**e)** State one difference between the relationships in photographs D and F. **(1mk)**

**f)** Construct one food chain from the organisms in photograph D **(1mk)**

……

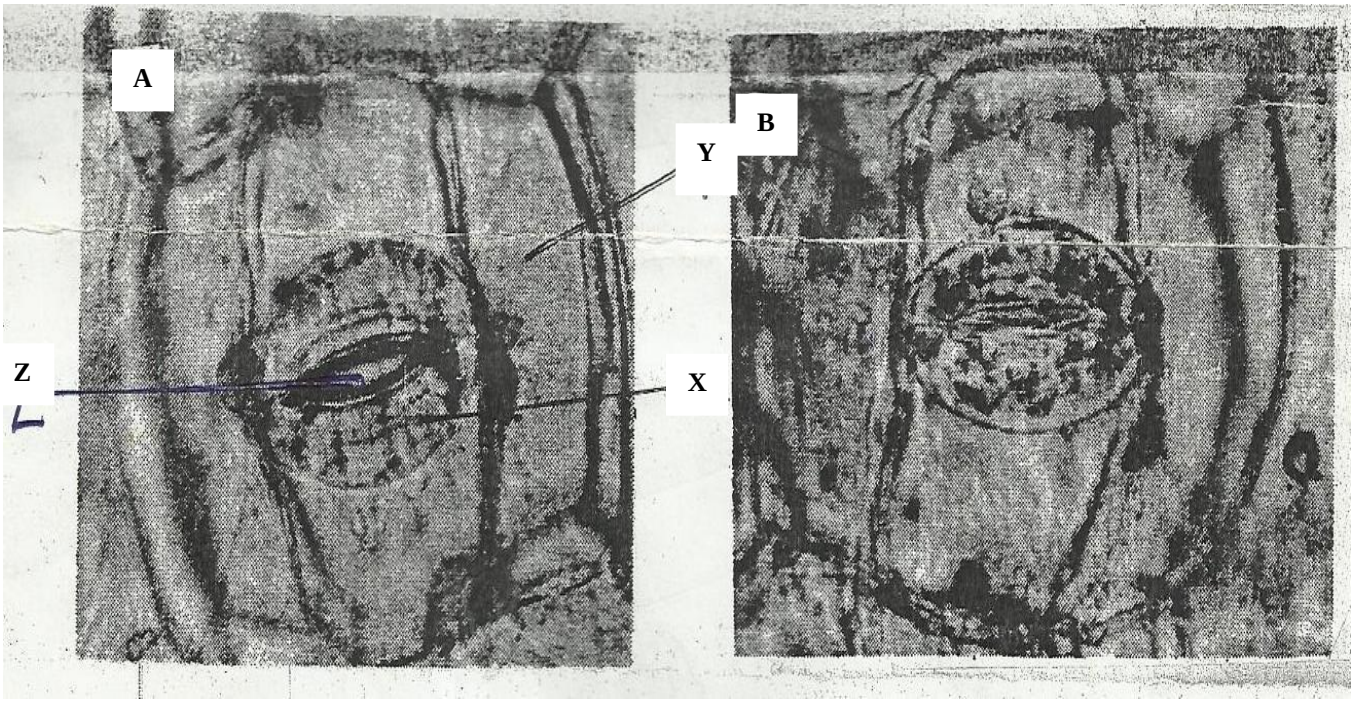
……

**g)** State two disadvantages of the relationship shown in photograph F **(2mks )**

……

……

**3.** The photographs below show a certain physiological process.



**a)** Name the physiological process shown by the photographs. **(1Mark)**

……

……

**b)** Name cells **X and Y.** **(2Marks)**

X

Y

**c)** How is cell X adapted to function? **(2Marks)**

……

……

**d)** i) Name **two** substances that passes through part Z. **(2Marks)**

……

……

**ii)** Describe the significance of the process shown by figure A. **(2Marks)**

……

……

……

……

**e)** State three theories that explain the appearance of figure A and B. **(3Marks)**

……

……

……

……

# KCSE FINAL PREDICTION

# BIOLOGY PRACTICAL

# TRIAL 8 PAPER 3

## Confidential

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## INSTRUCTIONS

### Each Candidate will Require the following:-

(i) Each candidate is required to have the following:-

- A bean seed (soaked overnight)
- scalpel
- Calcium hydroxide (CaOH) - 4$cm^3$ in a test tube.
- Drinking straw (transparent.)
- A petri-dish

(ii) Access to the following:-

- Humerus bone - labeled as K
- Thoracic vertebrae - labeled as L
- A Hand lens
- Biuret's reagent + a dropper
- Iodine solution + a dropper

# KCSE FINAL PREDICTION

# BIOLOGY

## TRIAL 8 PRACTICAL

**TIME: 1 ¾ HOURS**

**NAME…… INDEX NO……..…**

**SCHOOL…….. SIGN……**

**DATE……....**

### INSTRUCTIONS TO CANDIDATES

- Write your name, admission number, date, and signature and school name in the spaces provided.
- Answer **ALL** the questions in the spaces provided in the question paper
- You are NOT allowed to start working with the apparatus for the first 15 minutes of the 1 ¾ 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. (a)** You are provided with a straw and calcium hydroxide in a test tube.

- Dip one and a half of the drinking straw into the calcium hydroxide solution.
- Place your mouth at the open end of the drinking straw. Breathe out such as to bubbles gas into the calcium hydroxide solution five times.

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

……

……

**(ii)** Explain you observations in a(i) above. **(2mks)**

……

……

**(iii)** Write an equation of the reaction that occurred in the test tube. **(2mks)**

……

……

**(iv)** Apart from the chemical substance under investigation, name two other products that were bubbled into the test tube. **(2mks)**

……

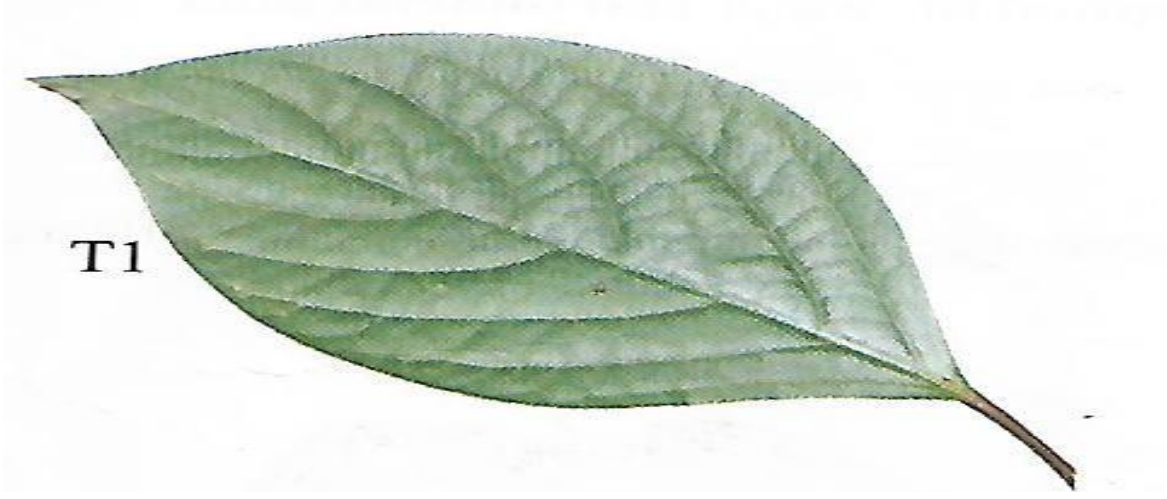
……

**(v)** Name the parts followed by gases from the lungs until it is exhaled. **(2mk)**

……

……

(b) Examine photograph M below and use it to answer the questions that follows:-



**(i)** State three observable features which adapt specimen M to gaseous exchange. **(2mks)**

……

……

……

……

**(ii)** State the sub-division and class to which specimen M belongs;-

Sub-division:…… **(1mk)**

Class:…… **(1mk)**

**2.** You are provided with soaked bean seed, Iodine solution, Biuret's reagent, a scalpel and a hand lens.By use of a scalpel, carefully cut the bean seed longitudinally such as to separate the two cotyledons.

**(a)** By use of a dropper, smear Iodine solution onto the exposed surfaces of the first cotyledon.

**(i)** Record your observation. **(1mk)**

……

……

**(ii)** Account for observation in a(i) above. **(1mks)**

……

……

**(b)** By use of a dropper, smear some Biuret's reagent onto the exposed surface of the second cotyledon.

**(i)** Record your observation. **(1mk)**

……

……

**(ii)** Account for your observation in b(i) above. **(1mk)**

……

……

……

**(c)** Explain how the type of germination in the specimen occurs. **(3mks)**

……

……

……

……

**(d)** State the role of the following in the germination of a seed.

**(i)** Oxygen **(1mk)**

……

……

**(ii)** Water **(2mks)**

……

……

……

**(iii)** Cotyledon **(3mks)**

……

……

……

……

**3.** You are provided with specimen labelled as K and L in a petri-dish. Examine them.

**(a)** Identify specimens K and L. **(2mks)**

**K:** ..... **L:**.....

**(b)** (i) Draw and label the anterior parts of specimen K. **(4mks)**

**(ii)** State ways by which specimen K is adapted to its functions. **(3mks)**

……

……

……

……

**(c)** From which parts of the body were specimens K and L obtained?

Specimen K:..... **(1mk)**

Specimen L:..... **(1mk)**

**(d)** Name the bone that articulates with specimen L at the:

**(i)** Proximal end ..... **(1mk)**

**(ii)** Distal end..... **(1mk)**

**(e)** Name the type of joint formed by specimen L at the anterior part; ..... **(1mk)**

# KCSE FINAL PREDICTION

# BIOLOGY PRACTICAL

# TRIAL 9 PAPER 3

## Confidential

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

## INSTRUCTIONS

## Each Candidate will Require the following:-

- Four test tubes in a test tube rack
- Visiking tubing
- Two pieces of thread
- Two 50 ml empty beakers
- 10 ml measuring cylinder
- Two labels

- About 20ml Starch solution Labelled Solution Q -Should be prepared using warm water)
- About 50ml Concentrated glucose solution labelled solution W

***Each candidate should have access to the following***

**1.**Iodine solution

**2.** Benedict's solution

**3.**Source of heat

# KCSE FINAL PREDICTION

# BIOLOGY

## TRIAL 9 PRACTICAL

**TIME: 1 ¾ HOURS**

**NAME…… INDEX NO……..…**

**SCHOOL…….. SIGN……**

**DATE……....**

### INSTRUCTIONS TO CANDIDATES

- Write your name, admission number, date, and signature and school name in the spaces provided.
- Answer **ALL** the questions in the spaces provided in the question paper
- You are NOT allowed to start working with the apparatus for the first 15 minutes of the 1 ¾ 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.** (a) You are provided with solution Q, Solution W, Visiking tubing and a thread. Divide solution Q and W into two halves in separate beakers. Use one half for **Procedure 1** and second half for **Procedure II.**

**Procedure 1**

- Using reagents provided and one half of solution Q, carry out tests to determine the food substance present in solution Q.
- Record the procedure, observations and conclusions in the table below.
- Repeat the same procedure using the half of solution W. **(10mks)**

| Test | Food Solution | Procedure | Observation | Conclusion |
|---|---|---|---|---|
| **Starch** | **Q** | | | |
| | **W** | | | |
| **Reducing sugars** | **Q** | | | |
| | **W** | | | |

**Procedure II**

(Clean and rinse properly any of the beakers that contained Solution **W** or Solution **Q** for use in this procedure)

- Tie one end of visking tubing provided with a thread tightly.
- Measure about 5ml of solution **Q** into the visking tubing (**Stir the solution thoroughly before use**).
- Tie the other end tightly to ensure that there is no leakage.
- Immerse the visking tubing and its content into a beaker containing solution **W.**
- Allow it to stand for 20 minutes.
- After 20 minutes empty the content of the visking tubing into a clean empty beaker.

**b)** Use the solution that was in the visking tube to test for starch and reducing sugars. Record the observations and conclusions in the table below: **(4mks)**

| Test | Observations | Conclusions |
|---|---|---|
| **Starch test** | | |
| **Reducing sugars test** | | |

**i)** Name the physiological process being investigated in the experiment. **(1mark)**

……

**ii)** Which structure in the living organism is represented by the visking tubing? **(1mark)**

……

**iii)** Account for the observation made in the table (b) above. **(2marks)**

……

……

……

……

**2 a)** Study the photograph below. The specimen had been placed in adequate light at a horizontal position for one week.



**i)** What was the aim of this experiment? **(1 mark)**

……

……

**ii)** What would be the result if seedling is placed on a working klinostat? **(1 mark)**

……

……

……

**iii)** Explain how the growth curvature occurred. **(3 marks)**

……

……

……

……

……

b) Study the Photographs below and answer the questions that follows :

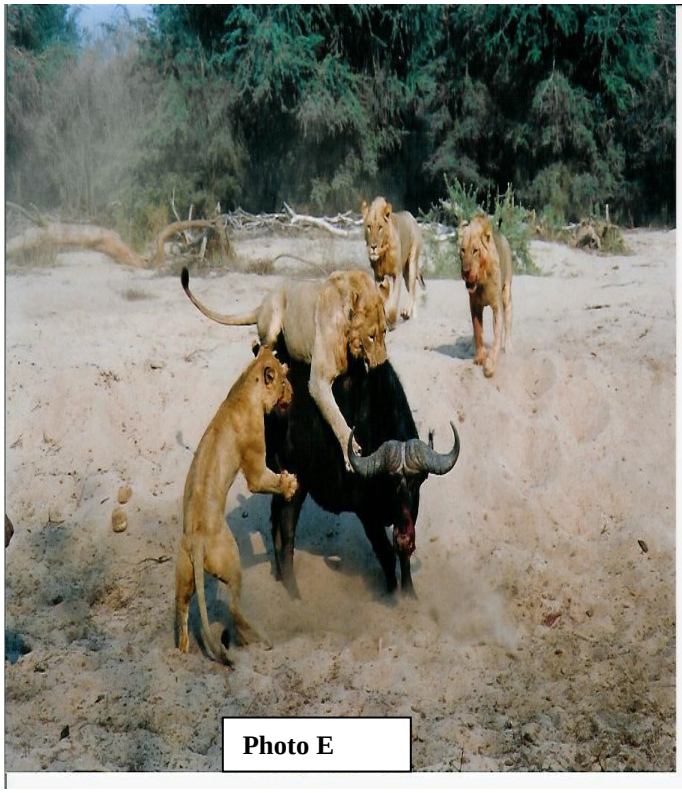

**Photo E**



**Photo F**

i) Name the type of relationship in Photograph E and F:

Photograph

**E ……..(1mk)**

Photograph

**F ……(1mk)**

**ii)**What is the importance of the relationship taking place in Photograph E. **(1mk)**

……

……

**iii)** Using observable features only explain two ways in which the flower is adapted for the activity taking place in Photograph F**.** **(2mks)**

……

……

……

……

**3.** The photographs below shows bones obtained from different regions of a mammalian body. The photographs are in different views.




**Anterior view of bone A**



**Dorsal lateral view of Bone B**



**Anterior view of bone C**

**a)** Identify the bones. **(3 marks)**

**A**……

**B**……

**C**……

**b)** Name the regions from which bone B was obtained from. **(1 marks)**

……

……

**c)** State **two** distinguishing features of the bone in photograph labeled B. **(2 marks)**

……

……

……

**d)** State the significance of the part labeled T in the photograph of bone A. **(1 mark)**

……

……

**e)** With reason state the type of joint formed at the distal and proximal ends of specimen C. **(4 marks)**

**i)** Distal end

……

Reason

……

……

**ii)** Proximal end.

……

Reason

……

……

**f)** Name the bone that articulates with the proximal end of the bone in photograph labelled C.

……**(1 mark)**

# KCSE FINAL PREDICTION

# BIOLOGY PRACTICAL

# TRIAL 10 PAPER 3

## 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:-

- Ripe orange fruit- **labeled E (Each *candidate)***
- Scalpel
- 1%Cuso4
- 10%NaoH
- Distilled water/tap water
- Test tube rack
- Test tube holder
- 0.01% Dichlorophenol Indophenol (**DCPIP**) Solution
- Three clean test tubes
- Means of labeling
- Source of heat
- Benedict's solution
- Tripod stand
- Wire gauze
- 50ml glass beaker
- Water bath

# KCSE FINAL PREDICTION

# BIOLOGY

## TRIAL 10 PRACTICAL

**TIME: 1 ¾ HOURS**

**NAME…… INDEX NO……..…**

**SCHOOL…….. SIGN……**

**DATE……....**

### INSTRUCTIONS TO CANDIDATES

- Write your name, admission number, date, and signature and school name in the spaces provided.
- Answer **ALL** the questions in the spaces provided in the question paper
- You are NOT allowed to start working with the apparatus for the first 15 minutes of the 1 ¾ 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 labeled **E**, examine specimen **E**

**a)** Giving reasons, identify the type of the fruit? **(2mks)**

……

……

……

**b)** Cut a transverse section through **specimen E**, make a well labeled diagram **(5mks)**

**c)** State the type of placentation of **E** **(1mk)**

……

**d)** i) Name the agent of dispersal for **E** **(1mk)**

……

**ii)** State how **E** is adapted to its mode of dispersal **(2mks)**

……

……

……

**e)** Squeeze out the juice from **specimen E** into test tubes and using the regents provided carry out food test and fill in the table below **(6mks)**

| Food test | Procedure | Observation | Conclusion |
|---|---|---|---|
| | | | |

**2.** Study the photographs and answer the following questions.



**PLATE 5**



**PLATE 6**



**PLATE 7**

**(i)** The photograph in Plate **5** shows the germination process in a species of legume.

**(a)** (i) Name the type of germination shown in the photograph. **(1 mark)**

……

……

(ii) Give a reason for your answer. **(1 mark)**

……

……

**(b)** Other than germination the seedling has shown some responses.

(i) Name **two** responses shown in the photograph. **(2 marks)**

……

……

……

(ii) State **one** survival value of each of the response named above. **(1 mark)**

……

……

**(ii)** Examine the photograph in Plate **6** and Plate **7** which show different essential parts of a flower of a species on two different plants.

**(a)** Name the flower parts shown in Plate **6** and Plate **7**. **(2 marks)**

……

……

**(b)** (i) Name the phenomenon described in the statement above. **(1 mark)**

……

……

(ii) Explain the significance of the phenomena stated in (a)(i) above. **(1 mark)**

……

……

**(c)** (i) State the mode of pollination of the flower shown in the photograph. **(1 mark)**

……

……

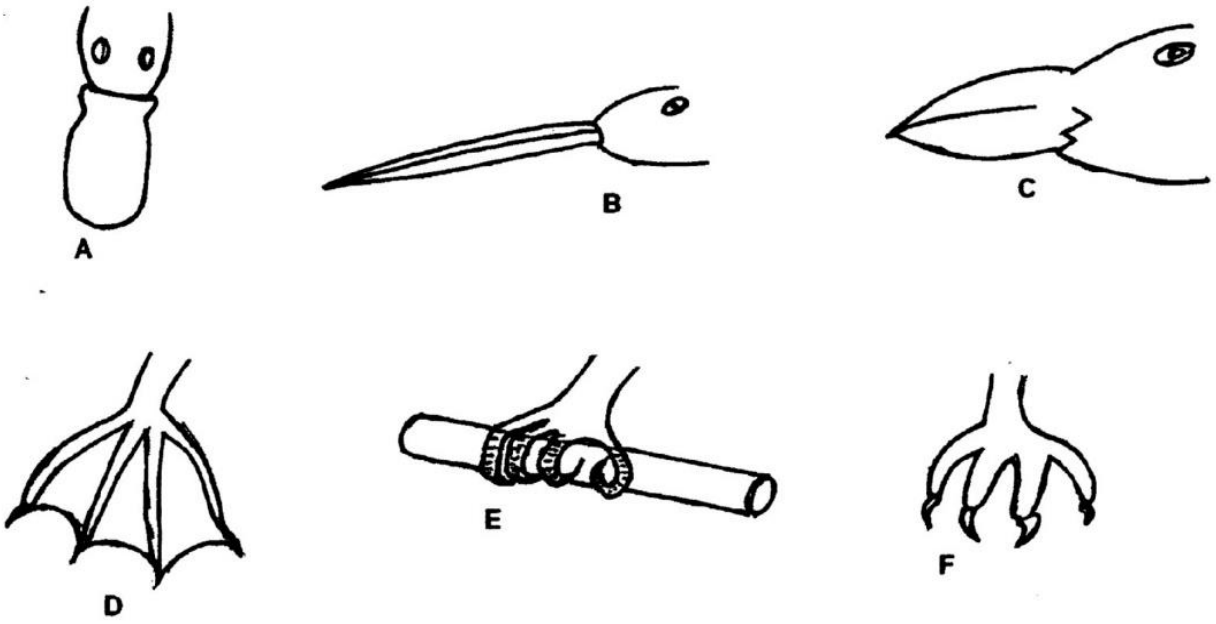
(ii) Give a reason for your answer. **(1 mark)**

……

……

……

**3.** The diagrams below represent body parts of some organisms (animals). Study them and answer the question that follow.




**(a) i)** Suggest the type of food eaten by organisms with the parts labeled A, B, C and F **(4 mrks)**

**ii)** With reasons, suggest the likely habitat of the organism from which the parts labeled D and E were obtained. **(4 mrks)**

(b) (i) Suggest the type of evolution that is exemplified by the organisms labeled D, E and F. Give reason for your answer. The type of evolution **(2mks)**

(ii) Suggest the significance of the above named type of evolution for the organism **(2mks)**

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