

# **BIOLOGY PP3 2024 KCSE MOCK**

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# **SERIES 1 CONFIDENTIAL PAPER**

231/2

BIOLOGY

PAPER 3

PRACTICAL

## **CONFIDENTIAL**

Each candidate should be provided with:-

1. Iodine solution
2. Benedicts solution
3. 1 piece of visking tubing of 10cm
4. Two pieces of thread of 10cm each
5. 30mls of glucose solution labeled L
6. 30mls of starch solution labelled K
7. 4 test tubes
8. Test tube holder
9. Two droppers
10. Means of heating

NAME.....ADM.....

SCHOOL.....INDEX.....

DATE .....SIGN.....TARGET.....

231/3

BIOLOGY

PAPER 3

(PRACTICAL)

1<sup>3</sup>/<sub>4</sub> HOURS

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

## **SERIES 1 2024 KCSE MOCK**

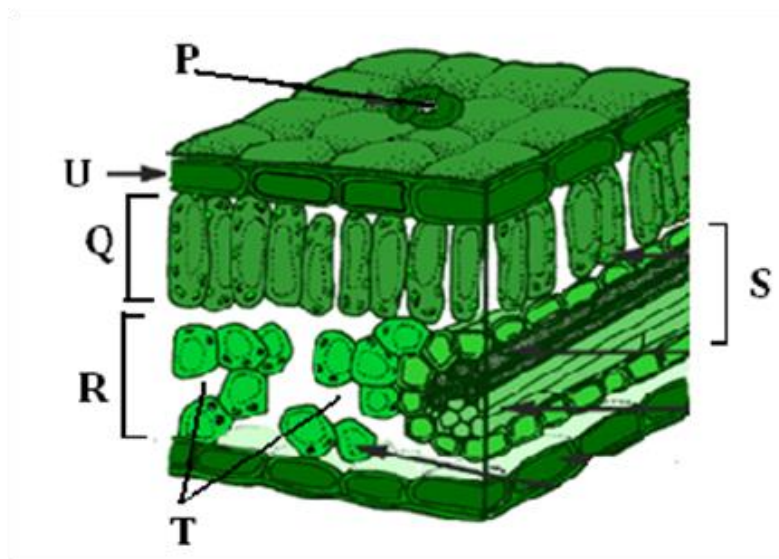
### **INSTRUCTIONS TO CANDIDATES**

- Write your name and Index Number in the spaces provided above.
- Sign and write date of examination in the spaces provided above.
- Answer **ALL** 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<sup>3</sup>/<sub>4</sub> 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.
- All workings **MUST** be clearly shown where necessary.
- Mathematical tables and silent electronic calculators may be used.
- This paper consists of 6 Printed pages. Candidates should check the question paper to ensure that all the papers are printed as indicated and no questions are missing

**For Examiners use only.**

Question	Maximum Score	Candidates Score
1	12	
2	15	
3	13	
<b>TOTAL SCORE</b>	<b>40</b>	

1. The photograph below shows the arrangements of different type of cells and tissues in a certain living organism. Study it and answer the questions that follow.



- a) i) From what part of the plant was the photograph obtained. (1 mark)

.....

.....

- ii) Name the parts labeled. (3marks)

P

.....

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Q

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R

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S

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T

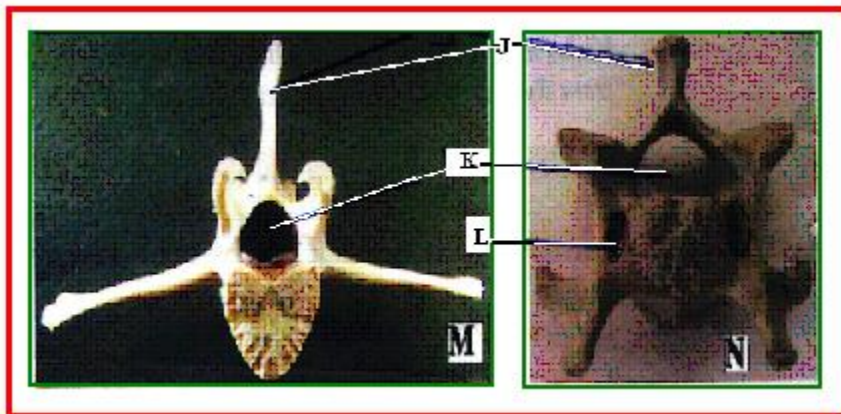
.....  
.....  
b. i) State the function of the part labeled Q. (1mark)

.....  
.....  
ii) State two adaptations of structure Q to its function. (2 marks)

.....  
.....  
.c. State two environmental factors which regulate the function of the part labeled P. (2 marks)

.....  
.....  
d. Measure the length of one cell of region labeled Q on the photomicrograph whose magnification is X5000.What is the actual length of the cell in micrometer? Show your working. (3marks)

.....  
.....  
2. You are provided with photographs of specimens labeled M and N. Examine them and answer the questions that follow.



a) i) Identify the specimens represented by the photographs.

M: .....

(1 mark)

N: .....

(1mark)

ii) label the parts labeled

J: .....

(1mark)

K: .....

(1 mark)

L: .....

(1mark)

b) i) State four observable differences between specimens M and N.

(4 marks)

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ii) Name the region of the body from which the specimens were obtained.

M: .....

N: .....

c) How is specimen N adapted to its function?

(4 marks)

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.....

3. You are provided with solution labeled L and K.
- a) Use the reagents provided to determine their identity. Record your procedure, observation and conclusion in the table below.
- (6 marks)

Food substance	procedure	observation	conclusion

- b. Tie one end of the visking tubing provided tightly. Put solution K in the visking tubing and tie the open end. Immerse the visking tubing in the beaker containing solution L. Let the set up stand for about 30 minutes.
- i) Test the contents in the visking tubing with iodine and benedict's solution. Record your procedure, observation and conclusion in the table below.

(3marks)

Test with	Procedure	observation	conclusion
Iodine solution			
Benedict's solution			

- ii) Test the contents in the beaker with iodine and Benedict's solution. Record your procedure, observation and conclusion in the table below.

Test with	Procedure	observation	conclusion
Iodine solution			
Benedict's solution			

- c. Account for your observation in b(i) and (ii) above

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# **SERIES 2 CONFIDENTIAL PAPER**

**231/3**

**BIOLOGY**

## **PRACTICAL CONFIDENTIAL**

*Each Candidate Should Be Provided With the Following Items*

- Solution A about 10mls (amylase enzyme solution)
- Solution B (benedict's solution )
- Solution C ( 10 mls starch solution labeled as solution C)
- NaCl solution 0.1% NaCl
- 1.4% NaCl solution
- Iodine solution labeled D
- Means of timing. A wall clock will be appropriate
- 10 ml measuring cylinder
- Scalpel
- Means of labeling (5 labels )
- Four test tubes
- Means of heating
- Distilled water labeled as solution Y
- Mortar and pestle
- Cork borer
- 2 medium irish potatoes
- 20mls concentrated salt solution labeled as solution Z
- 2mls hydrogen peroxide labeled as solution C

NAME.....ADM.....

SCHOOL.....INDEX.....

DATE .....SIGN.....TARGET.....

231/3

BIOLOGY

PAPER 3

(PRACTICAL)

1<sup>3</sup>/<sub>4</sub> HOURS

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

## **SERIES 2 2024 KCSE MOCK**

### **INSTRUCTIONS TO THE CANDIDATES**

- Answer **ALL** questions in the spaces provided.
- You are required to spend the first 15 minutes of the 1 <sup>3</sup>/<sub>4</sub> hours allowed for this paper reading the whole question paper carefully before commencing your work.
- Answers **MUST** be written in the spaces provided in the question paper.
- Additional pages **MUST** not be inserted.
- Candidates will be penalized for recording irrelevant information and wrong spelling especially technical terms.

### **For Examiner's Use Only**

<b>Question</b>	<b>Maximum Score</b>	<b>Candidate's Score</b>
1	14	
2	12	
3	14	
<b>Total Score</b>	<b>40</b>	

1. You are provided with the following:

- Solution A
- Benedict's solution labelled as solution B
- Solution C
- 0.1% NaCl solution
- 1.4% NaCl solution
- Iodine solution labeled as solution D

- Label the test tubes as P, Q and R; in each test tube place 3mls of solution C into each test tube:

a) Carry out iodine test on portion of the solution from test tubes P, Q and R and record the observation in the table below. (3 marks)

Test tube	Observation
P	
Q	
R	

b) To test tube Q, add 3 drops of 0.1 % sodium chloride solution and 2ml of solution A. Place test tube P, Q and R in a water bath and maintain at 37°C for 30 minutes. Using a drop of the solution from each test tube, repeat the procedure in (a) above and spare the rest for the next question. Record your observation in the table below

(2 marks)

Test tube	Observation at the end of the experiment
Q	
R	

- c) Put 2cm<sup>3</sup> of solution from test tube P in a clean test tube and add 2cm<sup>3</sup> of Benedict's (solution B) shake then heat the mixture to boil in a hot water bath. Record your final observation in the table below. (2 marks)

Test tube	Observation after experiment
Q	
R	

- d) Why was test tube P included in the experiment? (1 mark)

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- e) Account for the observations made in test tube Q and R at the end of the experiment (4 marks)

i) Test tube Q

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ii) Test tube R

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f) Suggest the identity of solution A (1 mark)

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g) Why was the water bath maintained at 37°C? (1 mark)

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2. a) Study the photographs below for specimen R and S.

S



R



- State four observable differences between the specimen R and S (4 marks)

Specimen R	Specimen S

- Suggest the advantages of the adaptations on the limbs of specimen S (2marks)

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- b) Name the phylum and class to which the specimen belongs. (2 marks)

Phylum -----

Class -----

- c) i) Give the type of metamorphosis in S (1 mark)

- .....
- .....
- .....
- ii) Draw the life cycle of the type of metamorphosis in the organism mentioned in C (i) above (3 marks)

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3. (a) You are provided with specimen Q, using a cork borer, remove eight strips of 2cm length from specimen Q. Place two into solution labeled Y and another two strips into solution labeled Z. Leave the set up to stand for 20 minutes.

NB Preserve the other two for use later in question 3(b) (i)

- (i) State the observation after 20 minutes when the strips are touched. (6 marks)

	Initial length	Final length	Change in length	Flexibility	Texture
Strips in solution Y	2cm				
Strips in solution Z	2cm				

- (ii) Account for the observations in (c) (i) above (4 marks)

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- (b) (i) using a mortar and a pestle crush one of the remaining strip, place the extract in a test tube and add solution C. State your observation. (1 mark)



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(ii) Repeat the procedure in (b) (i) with distilled water instead of hydrogen peroxide. State your observation. (1 mark)

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(c) Explain why:

(i) It was necessary to crush specimens in the experiment. (1 mark)

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.....  
.....  
(ii) Hydrogen peroxide should not accumulate in living tissue. (1 mark)

# **SERIES 3 CONFIDENTIAL PAPER**

## **PAPER 3**

### **CONFIDENTIAL INSTRUCTIONS TO ALL SCHOOLS.**

***Each student will be required to have the following.***

- (iii) A mature orange labeled specimen. **K**
- (iv) A scraped / razor blade.
- (v) A 100 ml beaker.
- (vi) Iodine solution with a dropper.
- (vii) Sodium hydroxide (10% NaOH) with a dropper.
- (viii) 1% copper(ii) sulphate with a dropper.
- (ix) Benedicts solution with a dropper.
- (x) DCIPIP solution with a dropper.
- (xi) Four test tubes.
- (xii) Test tube rack.
- (xiii) Test tube holder.
- (xiv) Means of heating.
- (xv) A ruler.
- (xvi) A bean seedling labeled **Q**.
- (xvii) A maize seedling labeled **S**.

- **NB: The seedlings should be planted three or two weeks before the day of the practical.**

NAME.....ADM.....

SCHOOL.....INDEX.....

DATE .....SIGN.....TARGET.....

231/3

**BIOLOGY**

**PAPER 3**

**(PRACTICAL)**

**1<sup>3</sup>/<sub>4</sub> HOURS**

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

## **SERIES 3 2024 KCSE MOCK**

### **INSTRUCTIONS TO CANDIDATES.**

- Write your name and index number in the spaces provided above.
- Answer all the questions in the spaces provided .

### **FOR EXAMINERS' USE ONLY**

Questions	Maximum score	Candidate 's score
1-3	40	

(xviii) You are provided with specimen labeled **K** make transverse section of the specimen using the scalpel provided.

iii) Draw a well labeled diagram of the section. (3mks)

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iv) i) What type of placentation is displayed by the above specimen. (1mk)

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ii) Identify the method of dispersal of the above specimen. (1mk)

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iii) Give a reasons for your answer in b(ii) above. (1mk)

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- v) Squeeze the juice out of the specimen provided and carryout food test using the reagent provided. (12mks)

<b><i>Food substance</i></b>	<b><i>procedure</i></b>	<b><i>observation</i></b>	<b><i>conclusion</i></b>
Starch			
Proteins			
Reducing sugars			
Vitamin C			

(xix) You are provided with specimens **Q** and **S**.

- With reasons state the class to which each at the specimen belong.

**Q** .....

Class .....(1mk)

Reason ..... (1mk)

**S** ..... (1mk)

Class ..... (1mk)

Reason ..... (1mk)

- State the type of germination exhibited by specimen. (2mks)

**Q** .....

**S** .....

- Cut a transverse section of the stem of specimen **Q**. Using a hand lens draw a plan diagram of the section. (4mks)

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- i) Which of the seedlings may form swellings on the roots later in their life? (1mk)

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ii) Name the organism that are found in the swelling and give their roles. (2mks)

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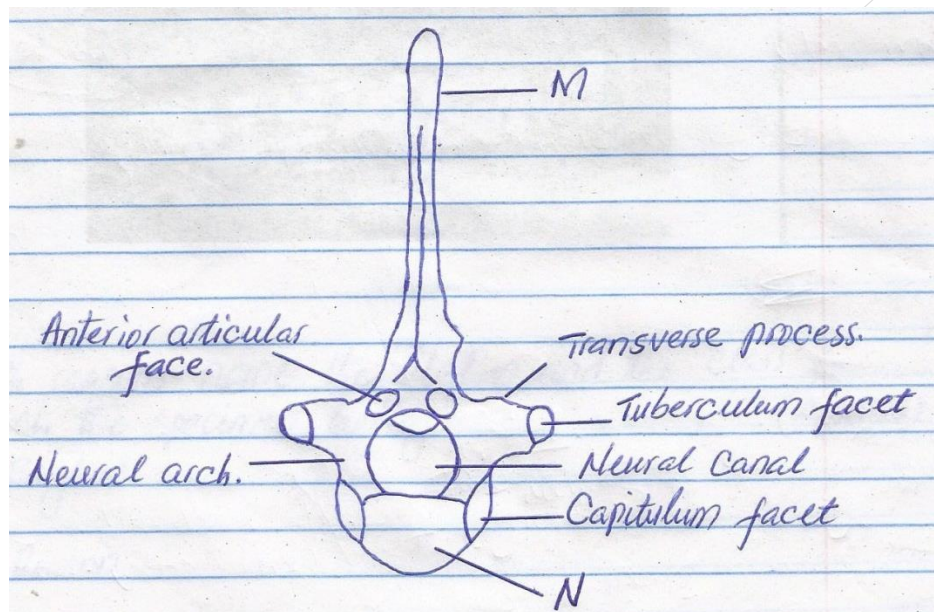
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Organism .....

Role .....

- (xx) i) The diagram below shows a mammalian vertebra.



- Name the parts labelled : (2mks)

**M** .....

**N** .....

- State one function of the neural canal. (1mk)

.....

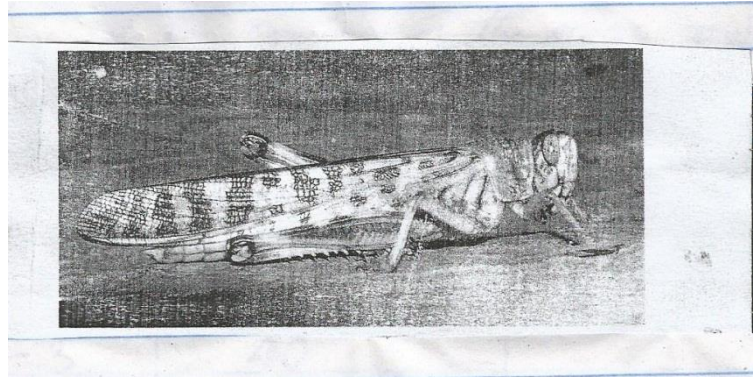
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- Name the region of the body from which the bone was obtain. (1mk)

- .....
- .....
- .....
- Which bone articulates (is fused) at the capitulum and tuberculum facets. (1mk)
- .....
- .....
- .....

ii) Below is a photograph of specimen L.



With reasons name the phylum and the class to which the specimen belongs. (4mks)

Phylum .....

Reason .....

Class .....

Reason .....

<<< **E N D** >>>



# **SERIES 4 CONFIDENTIAL PAPER**

## **BIOLOGY PAPER 3**

### **CONFIDENTIAL**

- 4 Pieces of thread
- 2 pieces of visking tubing (6cm)
- Solution Y(Brine) in a beaker (50ml)
- Measuring cylinder/ calibrated dropper
- Distilled water in a beaker (50ml)
- Starch solution marked X (in a testtube)
- Iodine solution in a beaker (50ml)
- Hibiscus flower marked K

NAME.....ADM.....

SCHOOL.....INDEX.....

DATE .....SIGN.....TARGET.....

231/3

**BIOLOGY**

**PAPER 3**

**(PRACTICAL)**

**1<sup>3</sup>/<sub>4</sub> HOURS**

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

## **SERIES 4 2024 KCSE MOCK**

### **INSTRUCTIONS TO CANDIDATES**

- Write your Name and Index No. in the spaces provided above
- Answer ALL the questions in the spaces provided

### **FOR EXAMINERS USE ONLY**

<b>QUESTION</b>	<b>MAXIMUM SCORE</b>	<b>CANDIDATES SCORE</b>
1		
2		
3		
<b>TOTAL</b>		

(xxi) You are provided with the following: pieces of thread, two pieces of visking tubing 6cm, Distilled water in a beaker, iodine solution in a beaker, Solution Y and Solution X. Open the two visking tubings and tie one end tightly. Using a dropper put 4 cm<sup>3</sup> of Solution Y and 4 cm<sup>3</sup> of solution X into each visking tubing, respectively. Ensure that the visking tubing containing solution X is immersed in the beaker containing iodine solution(set up **B**) and the visking tubing containing solution Y is immersed in beaker containing Distilled water (set up **A**) . Leave the set up for 30 minutes. Remove the Visking tubing and make observation

(a) State the observations

2 Marks

**A**

.....

.....

.....

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**B**

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.....

.....

.....

(b) State the physiological process in

2Marks

**A**.....

**B**.....

(c) Account for the observation made in

**A**

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.....

.....

..... 2(marks)

**B**

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.....

..... 3(marks)

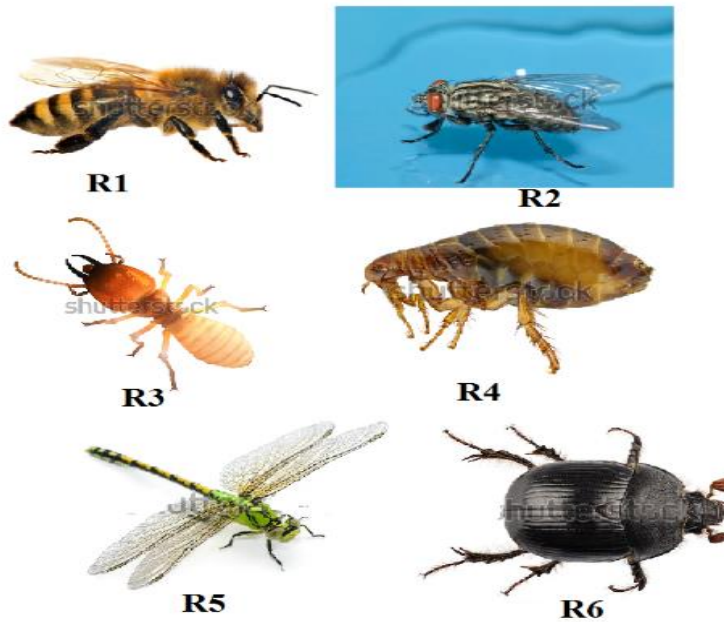
(d) State the importance of physiological process **A** in plants

2 Marks

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.....  
.....  
.....  
(e) How can you speed the process in **B**?

1Mark

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.....  
.....  
(xxii) Below are photographs of invertebrates which belong to the same class. Examine them



- To which class do the above invertebrates belong?

1Mark

- .....  
.....  
.....
- State two characteristics of the class named in (a) above

2 Marks

- .....
- .....
- Complete the dichotomous key below to identify the invertebrates to their orders 3marks

1a. Animal with wings ..... go to 3

b. ....go to 2

2a. Animal with hairy body .....Siphonoptera

b. Animal with smooth body.....Isoptera

3a. Animal with one pair of wings.....Diptera

b. ....go to 4

4a. Fore wings hard/elytra.....Coleoptera

b. ....Go to 5

5a. Long slender abdomen.....Odonata

b. Short broad abdomen.....Hymenoptera

- Using the dichotomous key above, identify to which orders the various organisms belong. In each case write down the steps that you followed to arrive at your answer. (6mks)

Specimen	Steps	Identity
<b>R1</b>		
<b>R2</b>		
<b>R3</b>		
<b>R4</b>		
<b>R5</b>		
<b>R6</b>		

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

- Describe the floral parts 3 Marks

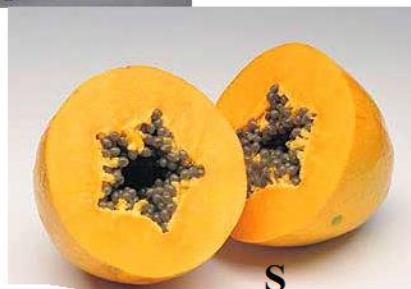
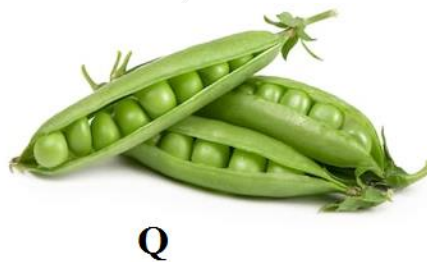
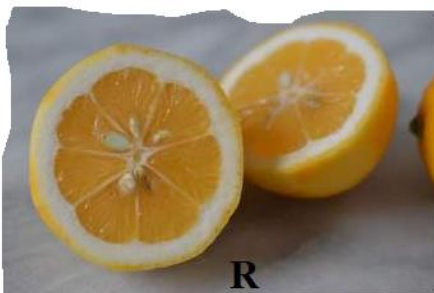
- Cut the specimen **K** longitudinally. Draw one of the sections

4 marks

- With a reason state the agent of pollination

2 Marks

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



(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

.....  
.....  
.....

**THIS IS THE LAST PRINTED PAGE**

# **SERIES 5 CONFIDENTIAL PAPER**

Confidential

Biology practical

**Each candidate requires the following;**

- A straight portion of raw pawpaw labelled D
- Two petri dishes, a scapel, two beakers containing liquids A and B
- In beaker A place  $30\text{cm}^3$  of distilled water
- In beaker B place  $30\text{cm}^3$  of sugar solution
- A 10mls measuring cylinder
- Means of labeling



NAME.....ADM.....

SCHOOL.....INDEX.....

DATE .....SIGN.....TARGET.....

231/3

BIOLOGY

PAPER 3

(PRACTICAL)

1<sup>3</sup>/<sub>4</sub> HOURS

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

## **SERIES 5 2024 KCSE MOCK**

### **INSTRUCTIONS TO CANDIDATES**

(xxiv) Answer all the questions.

(xxv) Spend the first 15 minutes of the 1 <sup>3</sup>/<sub>4</sub> hours allowed for this paper reading the whole paper carefully before commencing your work.

(xxvi) Answers MUST be written in the spaces provided in the QUESTION PAPER ONLY.

#### **FOR EXAMINERS USE ONLY**

QUESTION	Max Score	Candidate Score
1	12	
2	14	
3	14	
TOTAL SCORE	40	

1. You are provided with the following materials and reagents.

A straight portion of raw pawpaw, labelled **D**

Two petri dishes, a scalpel/sharp razor blade, two beakers containing liquids **A** and **B**

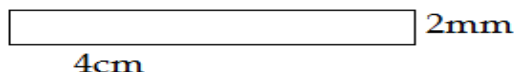
A measuring cylinder, A stop watch/access to a wall clock, Means of labeling

(i) Label the two petri dishes, **A** and **B**

(ii) Place  $30\text{cm}^3$  of liquid **A** into petri dish **A** and  $30\text{cm}^3$  of liquid **B** into petri dish **B**

(iii) Using the scalpel, prepare four thin, straight flat strips from the raw pawpaw peel

(iv) Each strip should measure about 4cm by 2mm as illustrated below



(v) Immerse two strips in petri dish **A** and the other two in petri dish **B** and leave the set ups undisturbed for 10 minutes.

(a) (i) State your observations in petri dish **A** and **B** after 10 minutes

Petri dish **A** (1mk)

.....

.....

Petri dish **B** (1mk)

.....

.....

(ii) Account for the observations made in (a) (i) above

Petri dish **A** (2mks)

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.....

.....

Petri dish **B** (2mks)

.....

.....

(b) Describe the nature of liquids **A** and **B** in relation to the sap in the pawpaw peel used in the experiment

Petri dish **A** (1mks)

Petri dish **B**

(1mks)

(c) With reference to the observations made, compare the nature of the outer and inner surfaces of the pawpaw peel (2mks)

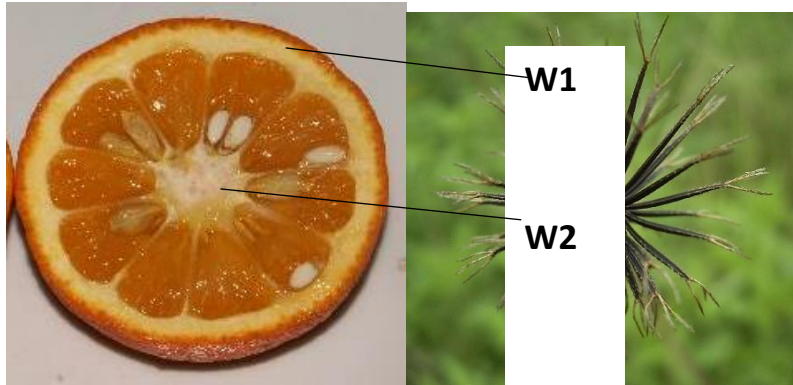
(d) (i) Name the cell structure responsible for the observations made in this experiment (1mk)

(ii) Explain how the cell structure named in (d) (i) above works to bring about the observations made (1mk)

2. Study the specimens provided then answer the questions below.



**W**



(a) Name the parts labeled **U1**, **W1**, **W2** and **V3** (4mks)

**U1**.....

**W1**.....

**W2**.....

**V3**.....

(b)(i) Suggest the mode of dispersal of the specimen labeled **U** (1mk)

.....  
.....

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

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.....

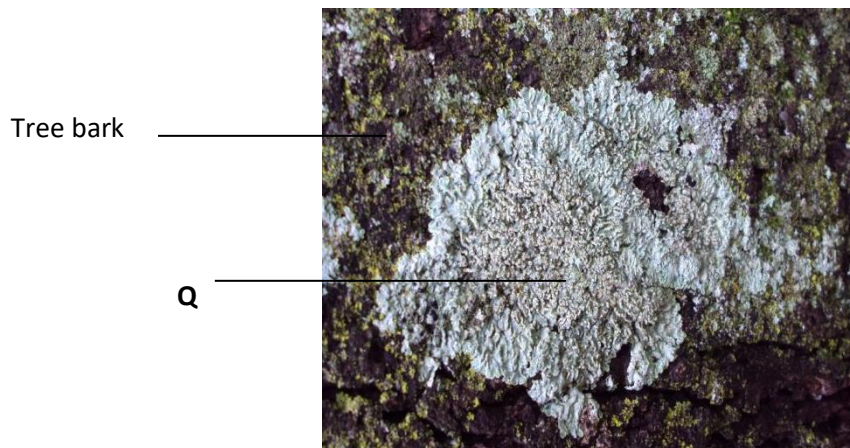
(c) (i) Suggest the mode of dispersal of the specimen labeled **X**. (1mk)

.....  
.....

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

.....  
.....

(d) The Photograph shown below was taken from a tree bark. Study it then answer the questions.



(i). Name organism labeled **Q**..... (1mk)

(ii) Name two organisms that make up **Q**..... (2mks)

(iii)Suggest the feeding relationship between the identified organisms in b (i) above explaining the role of each in the relationship. (1mk)

.....

.....

(iv) Identify the two possible Kingdoms represented by organism **Q**. (2mks)

.....

.....

3. Study photographs shown below then answer the questions.

Q



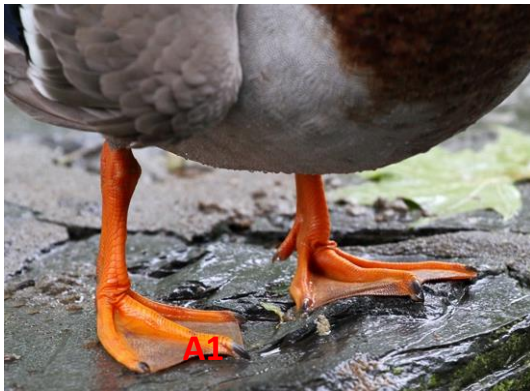
R



S



A



B



C



M



(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 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? (2mks)

.....  
.....  
.....



# **SERIES 6 CONFIDENTIAL PAPER**

231/3

**BIOLOGY**

**Paper 3**

**(Practical)**

**1 <sup>3</sup>/<sub>4</sub> Hours**

## **Confidential**

- Hibiscus flower ( labelled P)
- Maize seedling( germinated for 8-10 days) (labelled Q)
- Benedict's solution
- Iodine solution
- Two tes tubes
- Test tube holder
- Labels
- Means of heating
- Scalpels
- Hand lens
- Distilled water
- Mortar and pestle

NAME.....ADM.....  
SCHOOL.....INDEX.....  
DATE .....SIGN.....TARGET.....

**231/3**  
**BIOLOGY**  
**PAPER 3**  
**(PRACTICAL)**  
**1<sup>3</sup>/<sub>4</sub> HOURS**

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

## **SERIES 6 2024 KCSE MOCK**

- Write your name, Index Number , class in the spaces provided above
- Write the date of examination in the space provided above
- Answer ALL the questions

### **FOR EXAMINER'S USE ONLY**

QUESTION	SCORE	CANDIDATES SCORE
1	12	
2	15	
3	13	
<b>TOTAL</b>	<b>40</b>	

1. a) You are provided with specimen labelled Q. Remove the endosperm and crush using a motor and pestle. Add distilled water and obtain a solution. Decant the mixture to obtain solution Q1. Using the reagents provided, test the food present in solution Q1. (8marks)

Food	Procedure	Observation	Conclusion

b) Account for your observation in (a) above (3marks)

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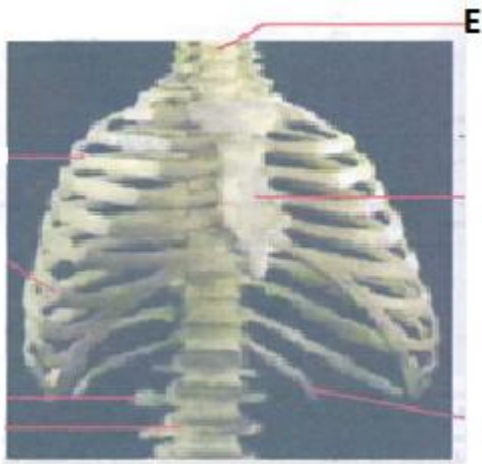
.....

c) Name the type of germination represented in the specimen above (1 mark)

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2. a). You are provided with a photograph with part of human skeleton. Use it to answer questions that follow.



i) Name the first vertebra labelled E and state how it is adapted to its function. (4marks)

Name.....

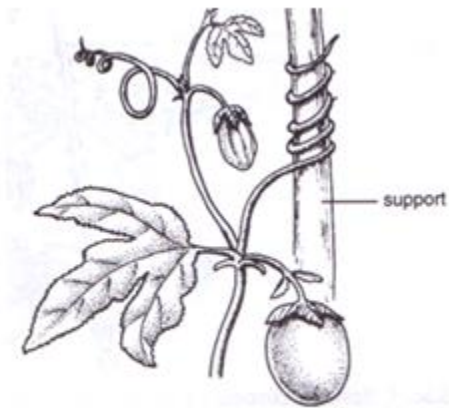
Adaptations

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.....

ii) Name the structure in the skull that articulates with the vertebra E (1mark)

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.....  
.....

GF(iii) Below are two photographs of plants.



**M**



**R**

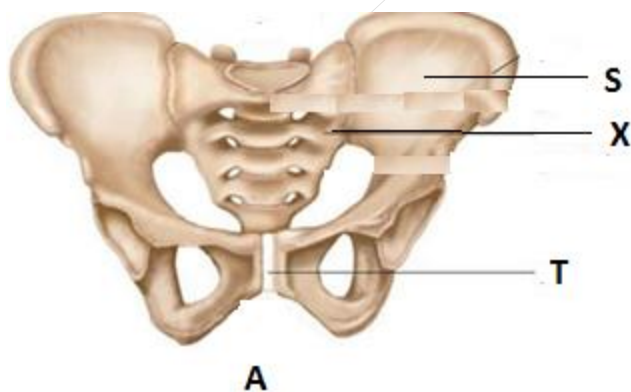
- (a) Identify support structures used by the plants in photographs M and R shown above. (2marks)

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- (b) Other than the structures illustrated above, name any one support structure in herbaceous plants. (1 mark)

.....

- b) The photographs below represent some skeletal materials obtained from a certain mammal. Study them then answer the questions that follow.



**A**



**B**

- i) Identify fused bone labelled X (1mark)

.....  
ii) Name parts S and T on photograph A and part U on photograph B (3mrks)

iii) Name the type of joint formed at the proximal and distal end of bone B (2marks)

Proximal end.....

Distal end.....

iv) Name the type of joint found in structure labelled X (1mark)

.....  
3. a). You are provided with specimen labelled P. Using a sharp scalpel, cut the specimen longitudinally to obtain two halves. Draw a large well labelled diagram of one of the sections obtained. (5marks)

b) i) Identify the agent of pollination of the above specimen (1mark)

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ii) Give three reasons for your answer above (3 marks)

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iii) Describe the floral parts of specimen P

(4mark)

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# **SERIES 7 CONFIDENTIAL PAPER**

## **Paper 3**

### **Confidential**

- Ripe orange labelled specimen Q,, 1 per candidate
- A piece of visking tubing (8 cm long), 1 per candidate
- 100ml beaker, 1 per candidate
- Two pieces of thread, 30cm long ( 2 per candidate)
- Knife/scalpel
- Labels, 3 per candidate
- 0.1% DCPIP
- Benedict's solution
- Sodium Hydroxide
- Copper sulphate
- Distilled water
- Six testubes on a rack



NAME.....ADM.....  
SCHOOL.....INDEX.....  
DATE .....SIGN.....TARGET.....

231/3  
BIOLOGY  
PAPER 3  
(PRACTICAL)  
1<sup>3</sup>/<sub>4</sub> HOURS

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

**SERIES 7 2024 KCSE MOCK**

- Write your name, Admission Number in the spaces provided above
- Write the date of examination in the space provided above
- Answer ALL the questions
- **FOR EXAMINER'S USE ONLY**

QUESTION	SCORE	CANDIDATES SCORE
1	14	
2	13	
3	13	
TOTAL	40	

1. a). You are provided with specimen Q. Cut it into two halves. Squeeze out juice from the two halves into a beaker. Sieve the juice to obtain solution Q1. Divide solution Q1 into two equal amounts. Label them as solution Q2 and Q3. Using the reagents provided, carry out food test on solution Q2. Record your results in the table provided below. (9 marks)

Food tested	Procedure	Observation	Conclusion

b) i) You have been provided with a visking tubing. Open it carefully. Tie one end with a piece of thread. Half- fill it with solution Q3. Tie the other end tightly to avoid leakage. Rinse the visking tubing and immerse it in a beaker with distilled water. Leave it to stand for 25 minutes. Using Benedict's solutions only, carry out food test on the contents of the beaker. (2marks)

Food substance	Procedure	Observation	Conclusion

ii) Account for your observation in b (i) above. (3 Marks)

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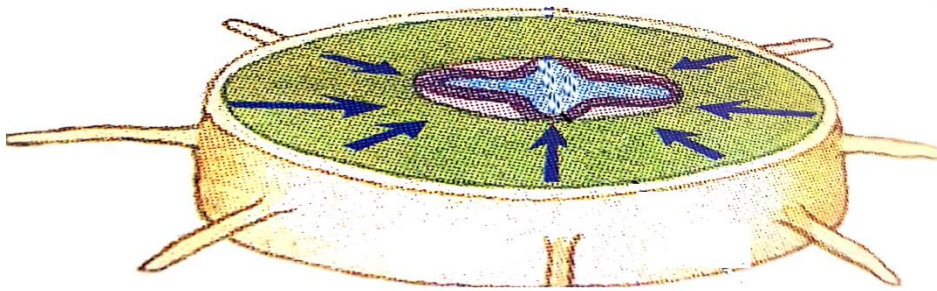
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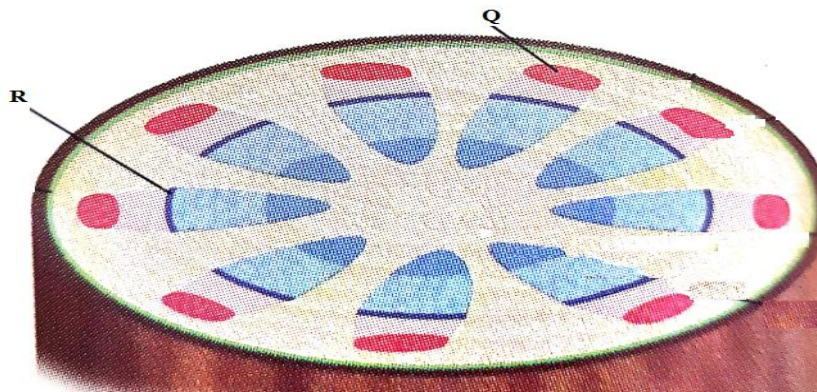
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2. Below are sections of dicotyledonous plant organs labelled S and T. Study them carefully and answer the questions that follow.



**T**



**S**

a) i) Give any three observable differences between the sections (3marks)

<b>S</b>	<b>T</b>

ii) On the diagram, label any three parts of section T (3marks)

iii) State the functions of the parts labelled Q and R on section S. (2marks)

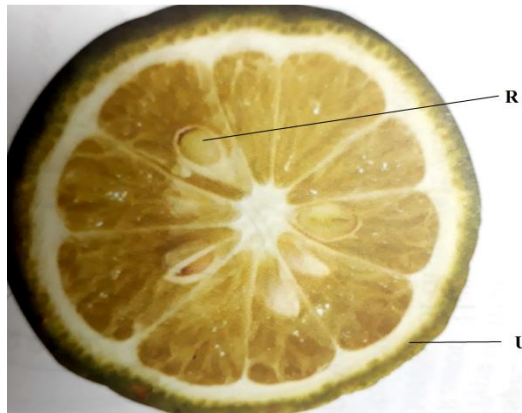
Q.....  
.....

R.....  
.....

iv) How would section S compare with that of a monocotyledonous plant? (3marks)

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.....

b) Below is a section of a plant organ that develops from a flower after fertilization

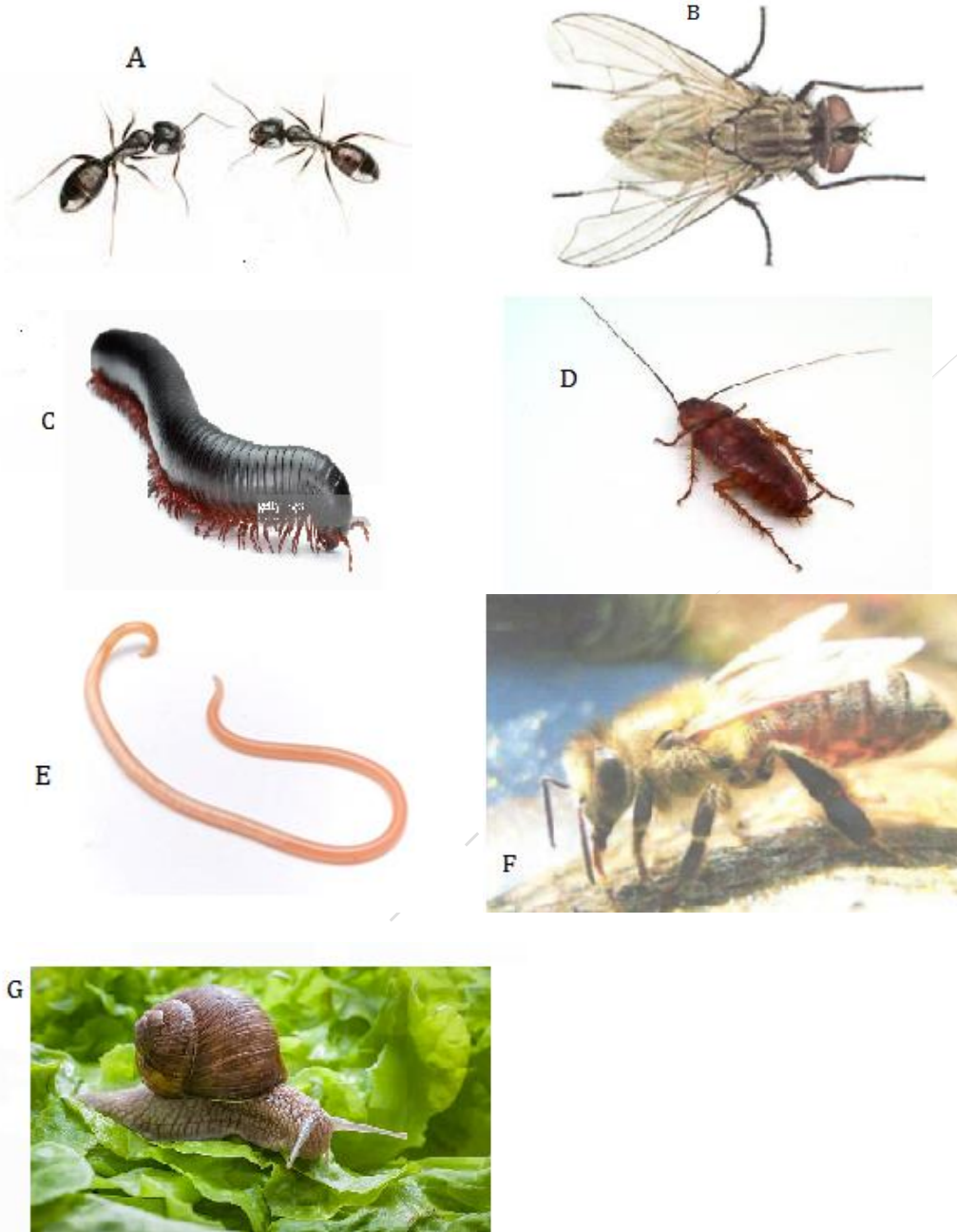


i) Name the part of the flower from which the parts labelled R and U develop from. (2marks).

R.....

U.....

3. a) You are provided with photographs below labelled A, B, C, D, E, F, G and a dichotomous key. Complete the dichotomous key and use to answer the questions that follow. ( 9 marks).



1. a) Animals with jointed appendages.....go to 3
- b) Animals without jointed appendages.....go to 2
2. a) Animals with slender long body.....Nematoda
- b) Animals with a thick short body.....Mollusca

3. a) .....go to 5  
 b) Animals without wings.....go to 4
4. a) Animals with numerous legs.....Myriapoda  
 b) .....Hymenoptera
5. a) Animals with short antenna.....Diptera  
 b) Animals with a pair of long antenna.....go to 6.
6. a) Animals with cuticulized forewings.....Dicoptera  
 b) Animals with a pair of membranous wings.....Hymenoptera

Organism	Steps followed	Identity
A		
B		
C		
D		
E		
F		
G		

b) Name the type of metamorphosis in organism B. (1 marks)

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e) Explain how the type of metamorphosis named in (b) above occurs. (3marks)

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# **SERIES 8 2024 KCSE MOCK**

## **231/3 PRACTICAL CONFIDENTIAL REQUIREMENTS**

1. Groundnuts - 3 small nuts per student ground into flour.
2. Iodine solution
3. sodium hydroxide
4. Copper sulphate
5. Filter paper /Plain paper.
6. Six test tubes per candidate
7. Leaves – (a) Broad leaf with smooth margins e.g Mango labeled A  
(b) Grass leaf Labeled B.  
(c) Tradescantia leaf / any succulent leaf labeled C  
(d) Broad leaf with serrated leaf margin e.g Tobacco leaf labeled D  
(e) Compound leaf labeled E.
8. Hand lens.
9. Piece of flesh labeled P
10. Piece of Liver labeled Q
11. Means of cutting e.g sharp Razor blade or surgical blade.
12. Pestle and Mortar.
13. Four labels.
14. Hydrogen peroxide – 10ml per student.
15. Sieve

NAME.....ADM.....

SCHOOL.....INDEX.....

DATE .....SIGN.....TARGET.....

231/3

BIOLOGY

PAPER 3

(PRACTICAL)

1<sup>3</sup>/<sub>4</sub> HOURS

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

## **SERIES 8 2024 KCSE MOCK**

Kenya Certificate of Secondary Education

### Instructions to candidates

(a) Write your name and Adm number in the spaces provided.

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

(c) Answer **all** the questions in the spaces provided.

(d) You are required to spend the first 15 minutes of the 1<sup>3</sup>/<sub>4</sub> hours allowed for this paper reading the whole paper carefully before commencing your work.

(e) Additional pages must **not** be inserted.

(f) This paper consists of 6 printed pages.

(g) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

(h) Candidates should answer all the questions in English.

### For Examiner's Use Only

QUESTION	MAXIMUM SCORE	CANDIDATE SCORE
	14	
	13	
	13	
	40	



1. You are provided with specimen labelled **D** which has been ground into flour.

Make a solution of the flour provided by adding water and stirring properly.  
Sieve or decant to obtain a solution from the mixture.

(a) (i) Using the reagents provided test for the presence of starch, proteins and lipids in the solution from specimen D. Record the procedures, observation, and conclusions in the table below. [9mks]

FOODSUBSTANCE	PROCEDURE	OBSERVATION	CONCLUSION
Starch			
Proteins			
Lipids			

(ii) From the conclusions made in (a) (i) above, suggest the regions of the alimentary canal where the digestion of specimen D would take place. (3mks)

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(b) State the **one** use of any two food types found in specimen D. (2 marks)

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2. You are provided with leaves of specimens **A, B, C, D, and E.**

**(a)** Use the following features in the order in which they are listed, to prepare a dichotomous key: (10 marks)

Type of leaf

Shape of the lamina

Succulent or non-succulent

Leaf margin

Leaflet attachment.

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(b) (i) Name the likely habitat of specimen **C**.

(1 mark)

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

(1 mark)

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(c) State the significance of the shiny upper surface of specimen **A**. (1 mark)

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3. You are provided with small pieces of two tissues, labeled P and Q, obtained from an animal.

(a).Cut each specimen into two equal halves. From each specimen, crush one half and leave the other half as a solid piece. Place the solid half of specimen P into a test tube labeled K. Place the solid half of specimen Q into a test tube labeled L.

Put about 2cm<sup>3</sup> hydrogen peroxide into each of the test tubes.

(i) State the observations made in the two test tubes.

(3mks)

Test tube K

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Test tube L

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(ii) Place the crushed specimen P into test tube labeled M and also place the crushed specimen Q into test tube labeled N. Add 2cm<sup>3</sup> hydrogen peroxide into test tube M and N. Record the observation for each test tubes M and N. (2mks)

Test tube M

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Test tube N

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(iii) Write down an equation for the reaction that was responsible for your observations in the experiments above. (1mark)

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(iv) Name the process represented by the equation in (iii) above. (1 mark)

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(b). Identify the substance that may be present in specimens P and Q that may have caused the observations made in the experiments. (1 marks)

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(c) Explain how crushing affected the results of the experiments. (3 marks)

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(d) What is the importance of the substance named in (b) above in a living organism? (3 marks)

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# **SERIES 9 2024 KCSE MOCK**

231/3

BIOLOGY

PAPE

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

## **CONFIDENTIAL**

**Each candidate should have the following:**

80 ml of iodine solution supplied with a dropper

8 cm visking tubing.

2 pieces of strong cotton thread 20 cm long.

100 ml beaker (glass or plastic)

Means of timing. A wall clock will be appropriate.

10 ml measuring cylinder.

100 ml water in 250 ml beaker.

10 ml of 10 % Starch solution labelled X.

10 ml of Benedict's solution supplied with a dropper

2 Test tubes

Hand lens

Specimen J: *Hibiscus rosaninensis*

K: *Bougainvillea glabra*

L: *Jacaranda mimosifolia*

M: *Zea mays*

N: *Lantana camara*

### **Preparation of 10 % Starch solution**

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

NAME.....ADM.....

SCHOOL.....INDEX.....

DATE .....SIGN.....TARGET.....

231/3

BIOLOGY

PAPER 3

(PRACTICAL)

1<sup>3</sup>/<sub>4</sub> HOURS

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

## **SERIES 9 2024 KCSE MOCK**

### **INSTRUCTIONS TO CANDIDATES**

- Write your **name** and **index number** in the spaces provided above
- **Sign** and write the **date** of examination in the spaces provided.
- Answer **all** the questions in the spaces provided.

#### **For Examiners Use Only**

<b>Question</b>	<b>Maximum score</b>	<b>Candidate's score</b>
1	16	
2	12	
3	12	
<b>TOTAL</b>	<b>40</b>	

*This paper consists of 5 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.*



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

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

Foot test	Procedure	Observation	Conclusion

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

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

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

(ii) Suggest the nature of visking tubing.

(1 mrk)

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

(4 mrks)

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

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2. You are provided with specimens labelled:

J: *Hibiscus rosaninensis*

K: *Bougainvillea glabra*

L: *Jacaranda mimosifolia*

M: *Zea mays*

N: *Lantana camara*

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

**Characteristics**

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

FOR MARKING SCHEME CALL SIR ABRAHAM **0729125181**

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

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

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.....

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

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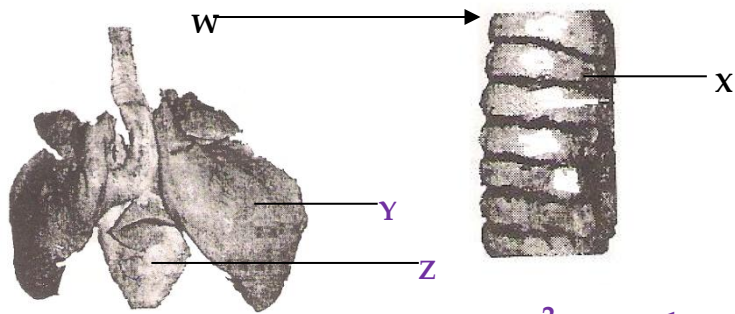
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ii) Give a reason for your answer in c i) above. (1 mrk)

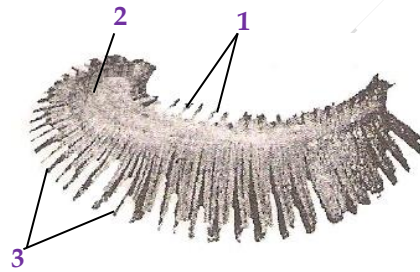
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3. Below are photographs labelled J and K of organs obtained from different animals. Examine them and answer the following questions.



Photograph J



Photograph K

- Identify the organs labelled: (2 mrks)

X:

Y:

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

Organ X:

Organ Y:

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

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

1:

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2:

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3:

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

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# **SERIES 10 2024 KCSE MOCK**

## **BIOLOGY (231/3) CONFIDENTIALS**

### **Requirements**

- 2 test tubes
- Hand lens
- **Specimen N** – maize seed soaked in water for 1 day and planted for 5 days to germinate.
- 2 beakers; Labeled 1 and 2;
  - In beaker 1 place 10 mls of solution **K**;
  - In beaker 2 place 20 mls of distilled water
- **Solution K**; Concentrated Glucose solution
- A visking tubing measuring 8cm
- Two pieces of Kneading thread

### **Access to;**

- Benedicts' solution in beaker with a dropper
- Means of heating
- 10mls measuring cylinder
- Test tube holder
- Means of timing



NAME.....ADM.....

SCHOOL.....INDEX.....

DATE .....SIGN.....TARGET.....

231/3

BIOLOGY

PAPER 3

(PRACTICAL)

1<sup>3</sup>/<sub>4</sub> HOURS

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

## **SERIES 10 2024 KCSE MOCK**

### **INSTRUCTIONS TO CANDIDATES**

Write your name, Admission Number in the spaces provided above.

Answer ***All*** questions in the spaces provided.

You are required to spend the first 15 minutes of the 1<sup>3</sup>/<sub>4</sub> hours allowed for this paper reading the whole paper carefully before commencing your work.

### **FOR OFFICIAL USE ONLY**

<u>QUESTION</u>	<u>MAX SCORE</u>	<u>CANDIDATES SCORE</u>
1	14	
2	12	
3	14	
TOTAL	40	

*Candidates should check the question paper to ensure that all the pages are printed as indicated and no questions are missing*

1. You are provided with visking tubing , a piece of thread and a solution labeled K., open the visking tubing and then tie one end tightly with the thread provided. Half-fill the visking tubing with solution K then tie the open end of the tubing tightly. Ensure solution K does not spill out of the tubing. Immerse the visking tubing into distilled water in a beaker. Ensure that the visking tubing is completely immersed in the distilled water.

Leave the set-up for 30 minutes and record your observations of the visking tubing.

(a)(i) Observation

(1mk)

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.....

(ii) Explain you observations in a (i) above

(3 mks)

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(b)Remove the visking tubing carefully. Ensure the contents of the visking tubing do not mix with that of the beaker. Using the reagents provided, test for the food substance present in the visking tubing and the beaker. (6 Marks)

#### I Solution in the Visking tubing

Food test	Procedure	Observations	Conclusion
Reducing sugars			

#### II Solution in the Beaker

Food test	Procedure	Observations	Conclusion
Reducing sugars			

(c) Account for the observations in (b) above. (3marks)

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.....

.....

d) State **one** application of the physiological process demonstrated above in plants (1 Marks)

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.....

2. You are provided with a specimen labeled N which was soaked in water and left for 5 days to germinate. With the aid of a hand lens, examine the external features of the specimen.

h) Draw and label the external structure of specimen N. (3 marks)

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) Name the type of germination exhibited by specimen N (1mark)

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.....

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

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i) State three reasons for soaking the seeds in the above experiment (3 marks)

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Name two internal conditions necessary for germination (2 marks)

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.....

Name a growth inhibitor in seeds (1 mark)

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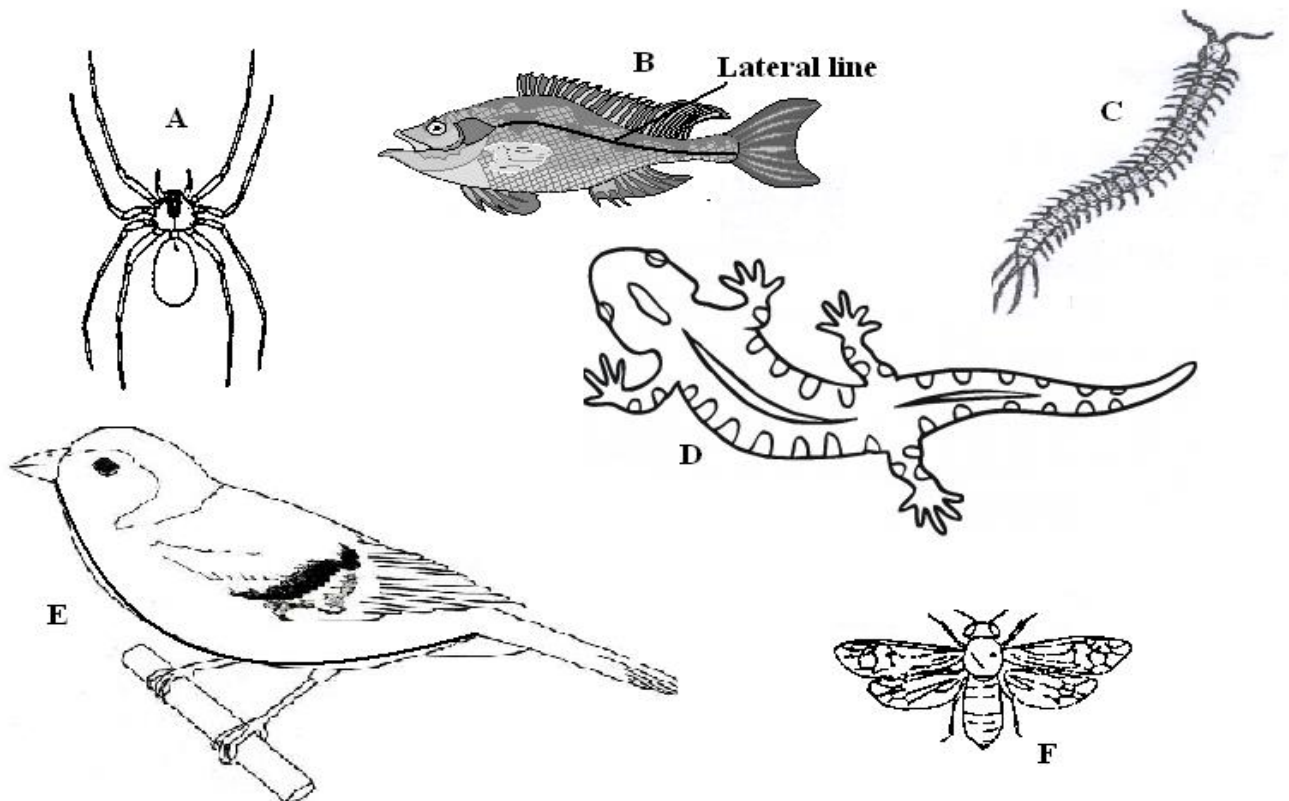
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f) Give a reason why maize grain is classified as a fruit (1mark)

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.....

4. Study the organisms drawn below and answer the questions that follow.



- Use the dichotomous key below to identify the class the organisms belong to. (12 marks)

- Phylum Chordata ..... go to 2
  - Phylum arthropoda ..... go to 3
- Has scales on the body ..... go to 4
  - Has no scales on the body ..... Mammalia
- Has cephalothorax ..... Arachnida
  - Has no cephalothorax ..... go to 5
- Has fins ..... Pisces
  - Has no fins ..... go to 7
- Has three pairs of legs ..... Insecta
  - Has more than three pairs of legs ..... go to 6
- Two pairs of legs per segment ..... Diplopoda
  - One pairs of legs per segment ..... Chilopoda
- Has feathers ..... Aves
  - Has no feathers ..... go to 8
- Has a tail ..... Reptilia
  - Has no tail ..... Amphibia

Specimen	Step followed	Identity
A		
B		
C		
D		
E		
F		

- (b) If the actual length from the tip of the mouth to the tip of the tail of the specimen B is 200mm, calculate the magnification. (2 marks)

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