

KCSE NATIONAL MOCKS

BIOLOGY PRACTICAL

(KCSE TRIALS 1-10)

An Exclusive Top-Notch KCSE Model Practical Questions.

*A series of most examinable Biology Practical Questions in
Several National Joint Mocks & Cross-country Trial tests
in preparation of final KCSE Examinations.*

SERIES 1

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

For Marking Schemes/Answers

0746 222 000

MWALIMU AGENCY

KCSE NATIONAL MOCKS

BIOLOGY PRACTICAL

TRIAL 1 EXAM

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.

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

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INSTRUCTIONS

Each Candidate will Require the following:-

- a) A tablet labelled K-Vitamin C tablet*
- b) Pestle and mortar*
- c) 2cm³ Copper sulphate solution*
- d) 2cm³ Sodium hydroxide solution*
- e) 2cm³ DCPIP solution*
- f) 3 test tubes*
- g) 3 droppers*

KCSE NATIONAL MOCKS

BIOLOGY

TRIAL 1 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 **1¾ hours** allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus that you may need.
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FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. You are provided with the following materials;

A tablet labelled K

Pestle and mortar

2cm³ Copper sulphate solution

2cm³ Sodium hydroxide solution

2cm³ DCPIP solution

3 test tubes

3 droppers

(a) Using a pestle and mortar, crush the tablet **K** then add 4cm³ of distilled water to form a solution. Divide into two portions each containing 2cm³. Carry out tests to determine the food substance (s) in **K** (8mks)

Substance	Food substance being tested for	Procedure	Observations	Conclusion
K				
K				

(b) Give **one** deficiency disease brought by lack of the food substance identified in the table above in the human body (1mk)

.....

(c) Identify **two** ways by which the food substance identified in the table above can be destroyed (2mks)

.....

.....

.....

2. Observe the organisms below and answer the questions that follow.



(a) Give **two** structural differences between the organisms above (2mks)

S	T

(b) The photographs below show organisms that are closely related



(i) Identify the evidence for organic evolution exhibited by the two organisms above (1mk)

.....
.....

(ii) Give any other two evidence that supports organic evolution (2mks)

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

(c) Observe the two organisms interacting in an ecosystem.



(a)(i) Identify which of the two animals M and L will have the least biomass (1mk)

.....
.....

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

.....
.....

(b) Explain the concept of “Survival for the fittest” in relation to the organisms illustrated in the

photograph.

(3mks)

.....

.....

.....

.....

(c) Explain **two** visible survival adaptive features for the organisms illustrated in the photograph

(4mks)

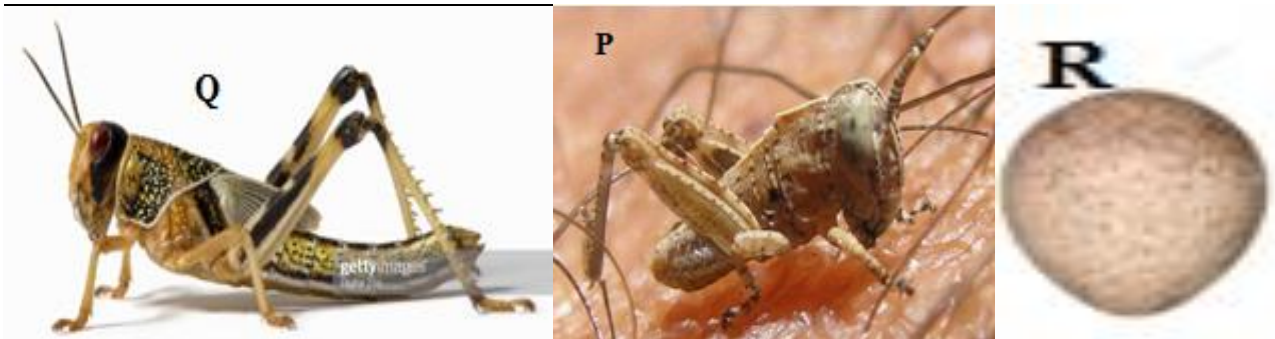
.....

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3. The photographs below show various developmental stages of an insect



(a) (i) Identify the stages labelled P, Q and R

(3mks)

P.....

Q.....

R.....

(ii) Give the differences between stage Q and P

(2mks)

Q	P

(b) Hormones play a major role in insect metamorphosis. Identify two hormones and their roles

(4mks)

Hormone	Role

(c) ‘Hundreds of millions of locusts have swept over several counties in Kenya, devouring tens of thousands of hectares of crops. This massive destruction has threatened food security in Kenya.....’ this is an extract from one of the local dailies dated 2nd February, 2020.



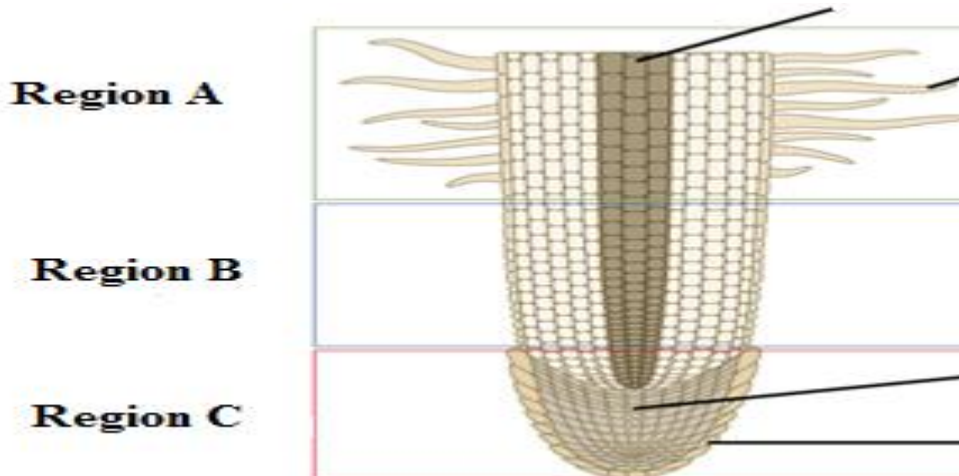
In view of the above statement, explain **any two observable** features that enable the organism **Q** above to be such a **menace** to **food security** in the country (2mks)

.....

.....

.....

(d) The photograph below shows a longitudinal section through a root



(i) Identify the regions labelled **A** and **B** **(2mks)**

A

B.....

(ii) Give **two** characteristics of cells found in region **C** **(2mks)**

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

KCSE NATIONAL MOCKS

BIOLOGY PRACTICAL

TRIAL 2 EXAM

Confidential

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INSTRUCTIONS

Each Candidate will require the following:-

- a) a test tube*
- b) Test tube rack*
- c) Soaked pea seeds with only radicle visible, marked N.----6pcs per student*
- d) 10ml measuring cylinder*
- e) A small piece of tissue paper for closing the test tube mouth*
- f) A Wooden splint*
- g) Bromothymol blue 2ml per student, marked D*

KCSE NATIONAL MOCKS

BIOLOGY

TRIAL 2 PRACTICAL

TIME: 1 ¾ HOURS

NAME..... **INDEX NO**.....

SCHOOL..... **SIGN**.....

DATE.....

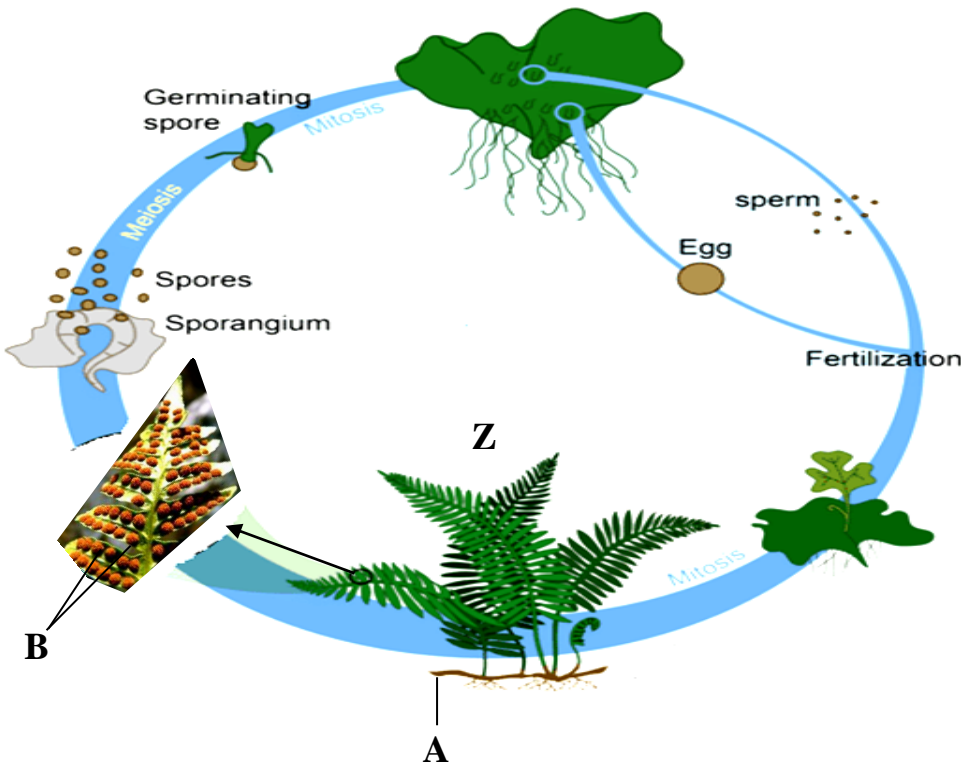
INSTRUCTIONS TO CANDIDATES

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- Answer **ALL** the questions in the spaces provided in the question paper
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FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. The diagram below illustrates the life cycle of a certain organism.



a) (i) Giving reasons, name the division to which the organism belongs.

Division..... (1mark)

Reasons (2marks)

.....

(ii) Which portion of the plant's life is independent? (1mark)

.....

b) (i) Name the parts labeled A and B. (2marks)

A.....

B.....

(ii) State one function of the part labeled B. (1mark)

.....
.....

(iii) Define the term alternation of generation. (1mark)

.....
.....

(ii) Identify the generations labeled K and L. (2marks)

Q

Z

(iii) In what way is generation L advantageous to generation K? (2marks)

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

(iv) Give a reason why the plant shown in the diagram above is common in swampy areas (2marks)

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

2. You are provided with several specimens N and indicator D, which is Bromolthymol blue. Study them and answer the questions that follow:

(a) (i) Identify the part of plant represented by specimen N. (1mark)

.....

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

.....
.....

(b) i) Name the physiological process which is taking place in specimen N. (1mark)

.....

ii) Describe the **two** changes which occurred to specimen **N** during the process named in b) i) above. **(2marks)**

.....

.....

.....

(c) i) State **two** internal factors which would promote the physiological process exhibited by specimen **N**, **(2marks)**

.....

.....

.....

ii) State **two** external conditions which would inhibit the process demonstrated by specimen **N**. **(2marks)**

.....

.....

.....

(d) Add 1ml of indicator marked **D** into a test tube, add 6 pieces of specimen **N** into the test tube. Close the mouth of the test tube tightly using a tissue paper. Leave the set up to stand on the tube rack for 30 minutes after which carefully remove specimen **N** without pouring the indicator marked **D** using a wooden splint.

(i) Record your observation after 30 minutes **(1mark)**

.....

.....

(ii) Account the observation in d) i) above **(3marks)**

.....

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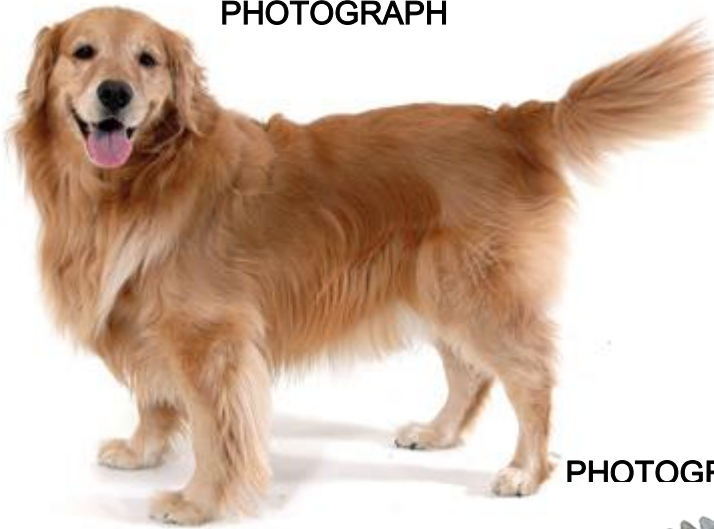
(iii) Suggest a control for his experiment. **(1mark)**

.....

.....

3. You are provided with photograph L, K and J. Examine them.

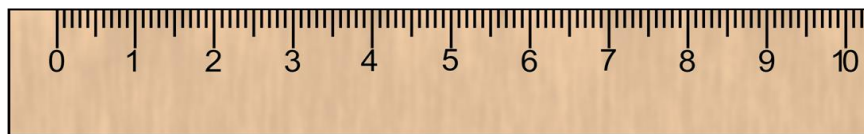
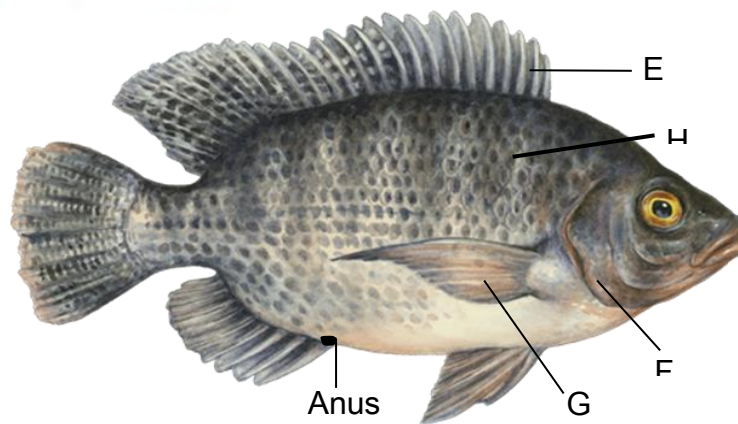
PHOTOGRAPH



PHOTOGRAPH K



PHOTOGRAPH J



a) Using observable features only, state class of animals shown in the photograph L and K. (4 marks)

L

Class

Reason.....

K

Class

Reason.....

b) (i) On the photograph J name the parts labeled E, F and G. (3 marks)

E.....

F.....

G.....

(ii) State the functions of the structures labeled H in photograph J. **(2marks)**

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

c) (i) The actual length of animal J in cm is shown by a section of the ruler in the photograph.
Calculate the tail power (show your working) **(2marks)**

(ii) State the significance of tail power to the life of fish in water. **(1mark)**

.....
.....

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BIOLOGY PRACTICAL

TRIAL 3 EXAM

Confidential

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INSTRUCTIONS

Each Candidate will require the following:-

- a) Each candidate should have:*
- b) One ripe banana*
- c) Scalpel/blade*

KCSE NATIONAL MOCKS

BIOLOGY

TRIAL 3 PRACTICAL

TIME: 1 ¾ HOURS

NAME..... **INDEX NO**.....

SCHOOL..... **SIGN**.....

DATE.....

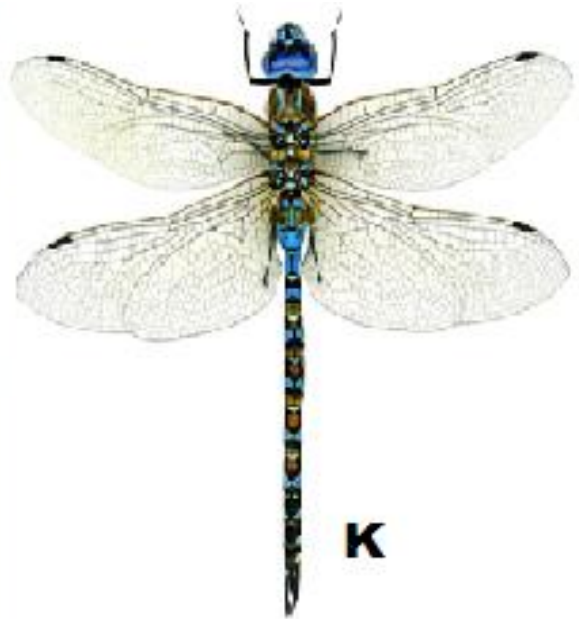
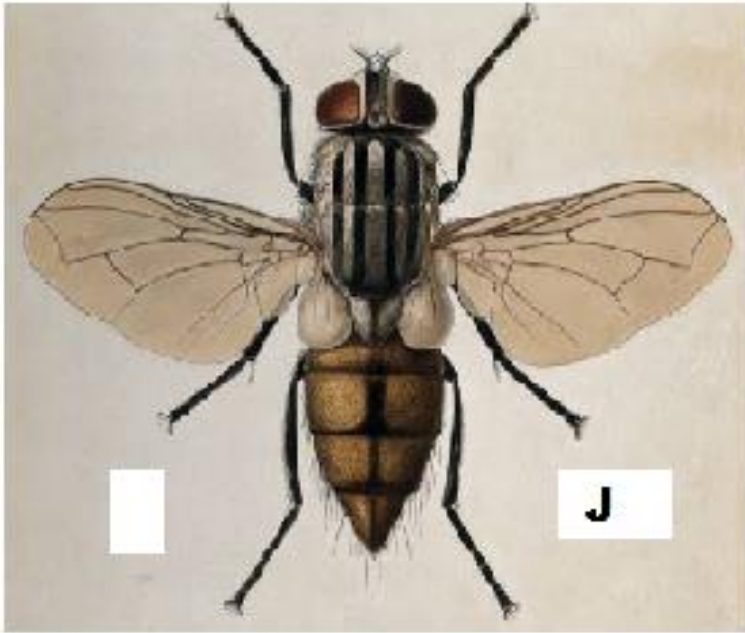
INSTRUCTIONS TO CANDIDATES

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- Answer **ALL** the questions in the spaces provided in the question paper
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FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. Below are photographs of two specimens, **J** and **K**. Both of them belong to the same phylum and class. Observe them carefully before you answer the questions that follow.



a) Name the class to which **J** and **K** belong and support your answer with two reasons.

Class 1mk

Reasons 2mks

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

b) Suggest why the circulatory fluid in **J** and **K** has no haemoglobin. 2mks

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

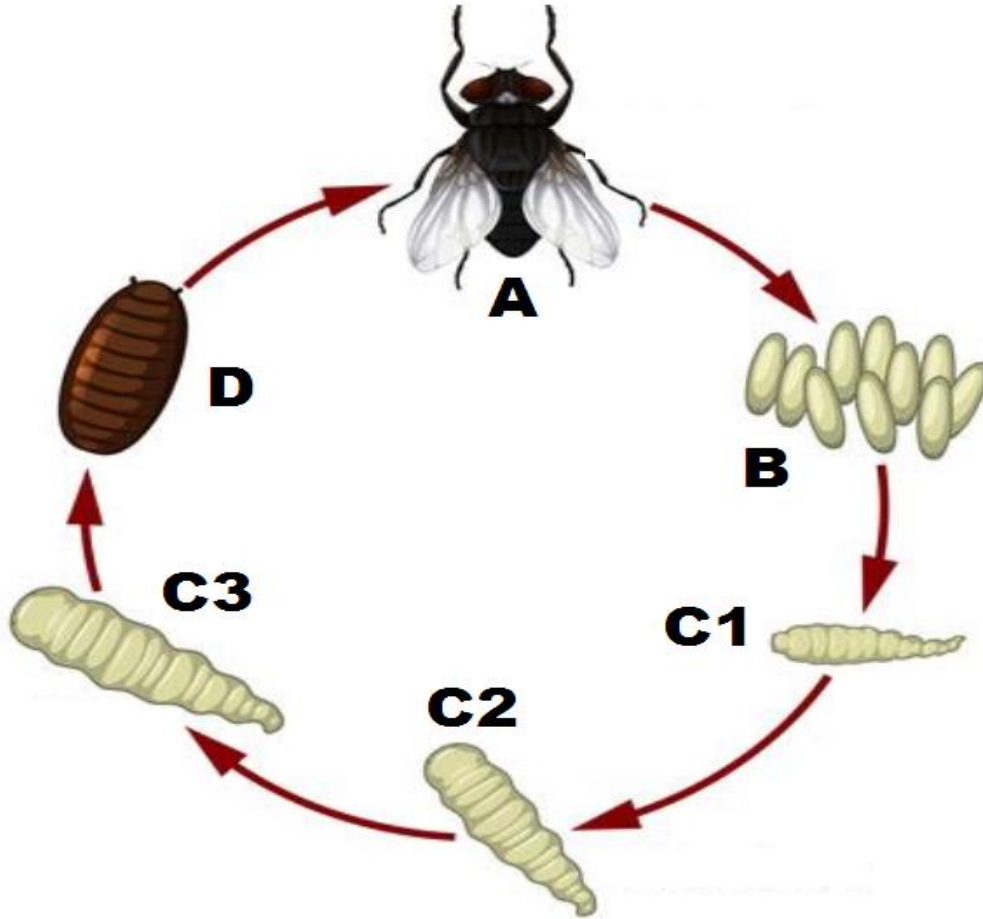
c) Observe their wings and suggest the type of evolution that could have taken place to give rise to **J** and **K**, and then give a reason for your answer.

Type of evolution 1mk

Reason

.....
.....2mks

d) Below is a diagram showing the life cycle of specimen J.



i) Identify the stage labeled **D**. 1mk

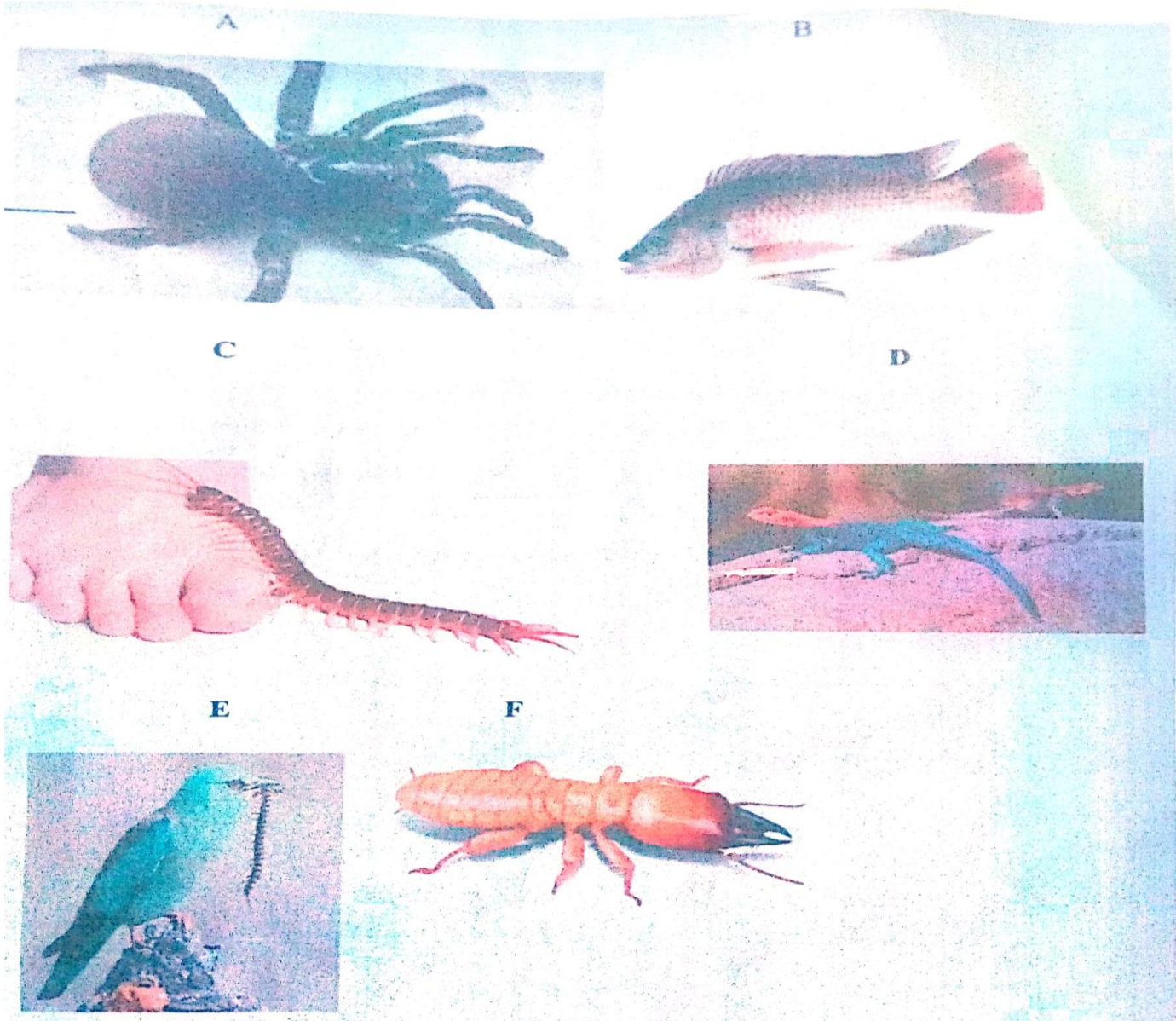
ii) Name the hormone responsible for the change from **D** to **A**. 1mk

.....
.....

iii) Explain the differences in the change from **C2** to **C3** and from **C3** to **D**. 4mks

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

Q2. Study the organisms below and answer questions in spaces provided .



- a. Complete and use the key below to identify the organism. **2mks**
- 1a. Organism with endoskeleton go to 2
- 1b. _____ go to 3
- 2a. Has scales on the body..... go to 4
- 2b. Has no scales on the body..... mammalian.
- 3a. Has cephalothorax Arachnida.
- 3b. Has no cephalothorax.....go to 5

- 4a. _____ pisces
- 4b. Has no fins **Go to 7**

- 5a. Has three pairs of legs **Insects.**
- 5b. Has more than three pairs of legs **go to 6**

- 6a. Two pairs of legs per segmentDiplopoda
- 6b. One pair of legs per segment.....chilopoda.

- 7a. Has feathers **Aves**
- 7b. Has no feathers**go to 8**

- 8a. Has a tail.....Reptilia
- 8b. Has no tail.....Amphibia.

b). Identify the organisms above using the completed key above. 6mks

Specimen	Steps followed	Identity
A		
B		
C		
D		
E		
F		

c). Name the phylum in which specimens C, E and F belong to
**1mk**

d). Give three reasons for your answer in (c). **3mks**

KCSE NATIONAL MOCKS

BIOLOGY PRACTICAL

TRIAL 4 EXAM

Confidential

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INSTRUCTIONS

Each Candidate will Require the following:-

QUESTION 1

- a. Mixture J: Solution containing a mixture of sucrose and vitamin C.*
- b. Benedict's solution,*
- c. Dilute hydrochloric acid solution.*
- d. Iodine solution*
- e. Dichlorophenol – indophenol (DCPIP) solution,*
- f. Sodium hydrogen – carbonate,*
- g. Means of heating,*
- h. 5 test tubes,*
- i. Test tube holder*
- j. Test tube rack*

QUESTION 2

- a. Photograph Q: complete hibiscus flower (Each candidate should be provided with a real flower)*
- b. Photograph Q: Half flower of hibiscus*
- c. Scalpel / razor blade*

KCSE NATIONAL MOCKS

BIOLOGY

TRIAL 4 PRACTICAL

TIME: 1 ¾ HOURS

NAME..... **INDEX NO**.....

SCHOOL..... **SIGN**.....

DATE.....

INSTRUCTIONS TO CANDIDATES

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FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. You are provided with an unknown mixture labelled J
 You are also provided with Benedict’s solution, dilute hydrochloric acid solution, iodine solution, Dichlorophenol-Indophenol (DCPIP) solution. Sodium hydrogen-carbonate solution, means of heating, test tubes, test tube holder and a test tube rack.

a) Using the reagent provided only, test for the food substances in mixture J. Record in the table below the chemical test, the procedure of the test, your observations and conclusions.

8mks

CHEMICAL TEST	PROCEDURE	OBSERVATIONS	CONCLUSIONS

b) Which of the components of mixture J does not undergo digestion in the mammalian digestive system? **1mk**

.....
.....

c) i)Name a deficiency disease that may result from a deficiency of the component identified in (b) above. **1mk**

.....
.....

d) Name a common carbohydrate that could be present in mixture J. **1mk**

.....
.....

e) State the role of hydrochloric acid and sodium hydrogen carbonate in the experiment. **2mks**

Hydrochloric Acid

.....
.....

Sodium Hydrogen Carbonate

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

2. The photographs below show a flower specimen. Study it carefully and use to answer the questions that follow.



- a) On the photograph, label the following **parts** **3mks**
 - i. Stigma
 - ii. Style
 - iii. Staminal tube

b) i) Classify the plant from which the flower was picked into the taxonomic groups listed below. **4mks**

Kingdom

.....

Division

.....

Sub division

.....

Class

.....

ii) Name three observable features from the photograph of the class you named in (a) (i) above.

3mks

.....

.....

.....

.....

.....

c) Suggest the pollination agent of this flower. Give reasons for your answer.

Pollinating agent

1mk

.....

Reasons

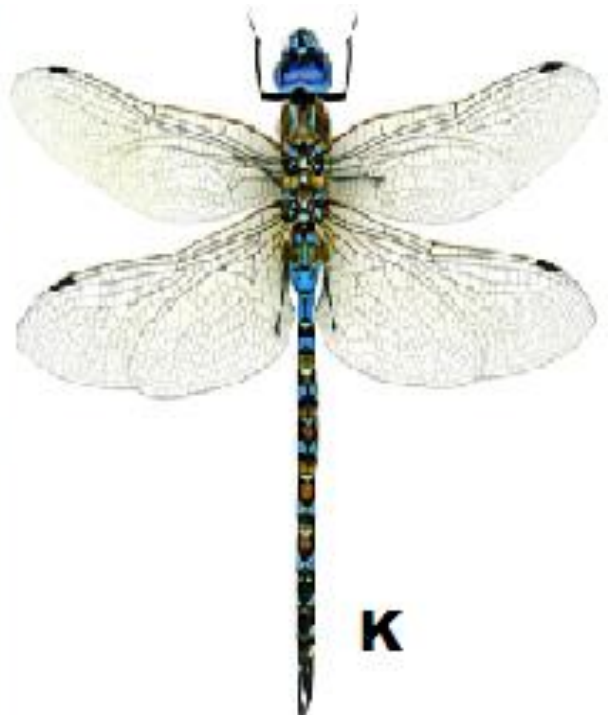
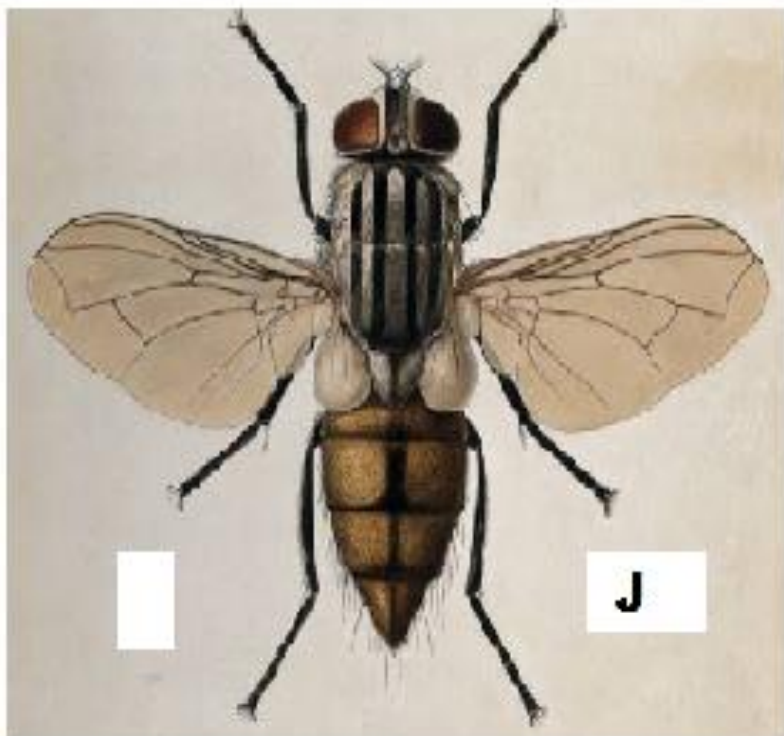
2mks

.....

.....

.....

3. Below are photographs of two specimens, **J** and **K**. Both of them belong to the same Phylum and Class. Observe them carefully before you answer the questions that follow.



a) Name the class to which **J** and **K** belong and support your answer with two reasons.

Class 1mk

.....

Reasons 2mks

.....
.....

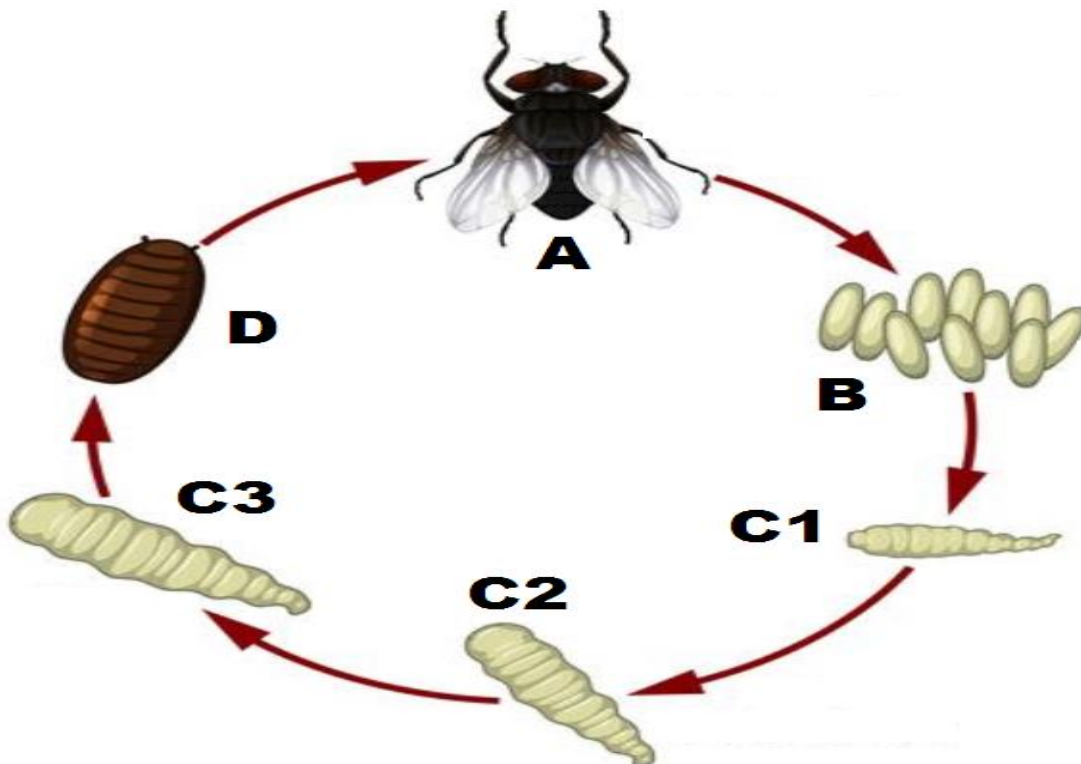
b. Suggest why the transport fluid in **J** and **K** has no haemoglobin. 2mks

.....
.....

c. The actual length of specimen **K** is 8cm, given that both **J** and **K** are under the same magnification, determine the actual length of **J** 3mks

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

d. Below is a diagram showing the life cycle of specimen **J**.



i. Identify the stage labeled **D**.

1mk

.....
.....

ii. Name the hormone responsible for the change from **D** to **A**.

1mk

.....
.....

iii. Explain the differences in the change from **C2** to **C3** and from **C3** to **D**.

2mks

C2 to C3

.....
.....

C3 to D

.....
.....

iv. State the importance of the process illustrated above in the life cycle of the organism **2mks**

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

KCSE NATIONAL MOCKS

BIOLOGY PRACTICAL

TRIAL 5 EXAM

Confidential

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INSTRUCTIONS

Each Candidate will Require the following:-

1. *Specimen P – soaked (overnight) Maize seed.*
2. *Specimen Q – soaked (overnight) Bean seed.*
3. *A white tile.*
4. *Scalpel.*
5. *Mortar and pestle.*
6. *Distilled water.*
7. *Two test-tubes on a test-tube rack.*
8. *Iodine solution.*
9. *Sodium hydroxide.*
10. *Copper(II) sulphate.*

KCSE NATIONAL MOCKS

BIOLOGY

TRIAL 5 PRACTICAL

TIME: 1 ¾ HOURS

NAME..... **INDEX NO**.....

SCHOOL..... **SIGN**.....

DATE.....

INSTRUCTIONS TO CANDIDATES

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FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. You are provided with specimen P and Q. Examine them carefully and answer the questions that follow.

(a). State three observable differences between P and Q. **(3mks)**

Specimen P	Specimen Q

(b) Identify the parts of the flower from which specimen P and Q developed. **(2mks)**

P

Q

(c i). Make a longitudinal section of specimen P. Draw a well-labelled diagram of one half with all its Contents intact. **(4mks)**

(ii). State the functions of any two structures in (c) (i) above. **(2mks)**

.....

.....

.....

(d). Using a mortar and pestle crush specimen Q, add 5ml distilled water to make a **solution Q** and carry out appropriate tests using the reagents provided. **(6mks)**

Test	Procedure	Observation	Conclusion

2. Study the photos below.



Plant K1



Plant K2

a) Name:-

i) The stimulus operating in **Plant K1**. (1mk)

.....

ii) The type of response being investigated in **Plant K2**. (1mk)

.....

iii) Suggest a control set up for **Plant K2** investigation. (1mk)

.....

.....

b) Describe the role of auxins in the response exhibited by **Plant K1**. (4mks)

.....

.....

.....

.....

.....

.....

c) What is the biological value of the tropisms evident in: -

i) **Plant K1** (1mk)

.....

.....

ii) **Plant K2** (1mk)

.....

.....

3. Below are photos of of a certain arthropod at different stages of its life cycle.



a) Identify the stage of the life cycle represented by organism S. (1mk)

.....

.....

.....

b i) Name the stage that immediately precede and succeed organism S in the life cycle.

(2mks)

Preceding stage

.....

Succeeding stage.

.....

ii) What name is given to the complete life cycle of the arthropod? (1mk)

.....

.....

c) Name the gaseous exchange system of organism **S**. Give a visible feature that supports your answer. **(2mks)**

.....

.....

.....

d i) What type of food does organisms **S** feed on? Give a reason to support your answer. **(2mks)**

.....

.....

.....

ii) State the significance of stage **U** in the life cycle of the beetle. **(2mks)**

.....

.....

.....

iii) How is specimen **T** adapted to locomotion in its habitat ? **(2mks)**

.....

.....

.....

e) State the role of the following in the life cycle of the arthropods. **(2mks)**

i) Juvenile hormone.

.....

.....

ii) Moulting stimulating hormone.

.....

.....

KCSE NATIONAL MOCKS

BIOLOGY PRACTICAL

TRIAL 6 EXAM

Confidential

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INSTRUCTIONS

Each Candidate will Require the following:-

- a) A mature pea pod.*
- b) Mortar and pestle*
- c) Distilled water*
- d) A small beaker*
- e) 3 test tubes*
- f) Test tube holder*
- g) Benedict's solution*
- h) Iodine solution*
- i) 1% copper (II) Sulphate*
- j) 10% Sodium Hydroxide*
- k) Means of heating*

KCSE NATIONAL MOCKS

BIOLOGY

TRIAL 6 PRACTICAL

TIME: 1 ¾ HOURS

NAME..... **INDEX NO**.....

SCHOOL..... **SIGN**.....

DATE.....

INSTRUCTIONS TO CANDIDATES

- a) Write your name, admission number, date, and signature and school name in the spaces provided.
- b) Answer **ALL** the questions in the spaces provided in the question paper
- c) You are **NOT** allowed to start working with the apparatus for the first 15 minutes of the **1¾ hours** allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus that you may need.
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FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. You are provided with specimen labelled F. Examine the specimen.

a) With reasons state the type of fruit specimen F is. **(1mk)**

.....

Reason **(1mk)**

.....

.....

b) Carefully open specimen F to expose it's contents

i) State the type of placentation in the specimen. **(1mk)**

.....

.....

ii) Draw and label the opened specimen. **(5mks)**

iii) Work out your magnification. **(2mks)**

c) Remove the seeds and crush them using a mortar and pestle to make a paste. Add a little water to make about 10ml solution of the paste.

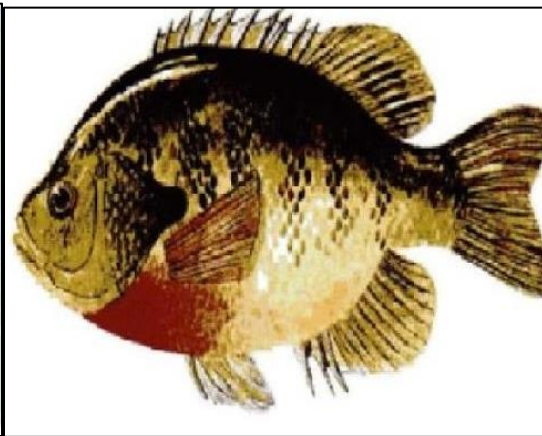
Using the reagents provided test for the food substances present in the juice. Record the food substances being tested, procedures, observation and conclusion in the table below. **(6marks)**

FOOD SUBSTANCE BEING TESTED	PROCEDURE	OBSERVATION	CONCLUSION

2. Identify the specimens in the photograph using the key and outline the steps followed to identify each specimen. (8mks)



A



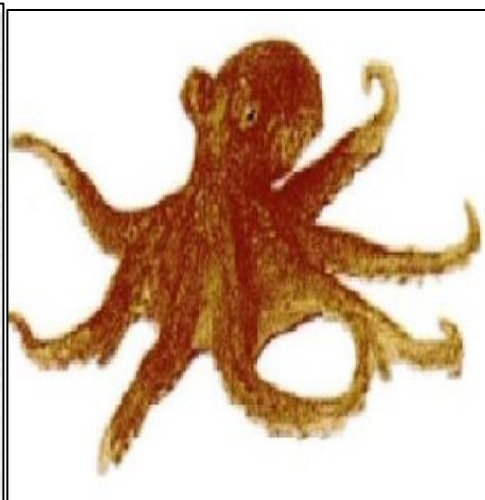
B



C



D



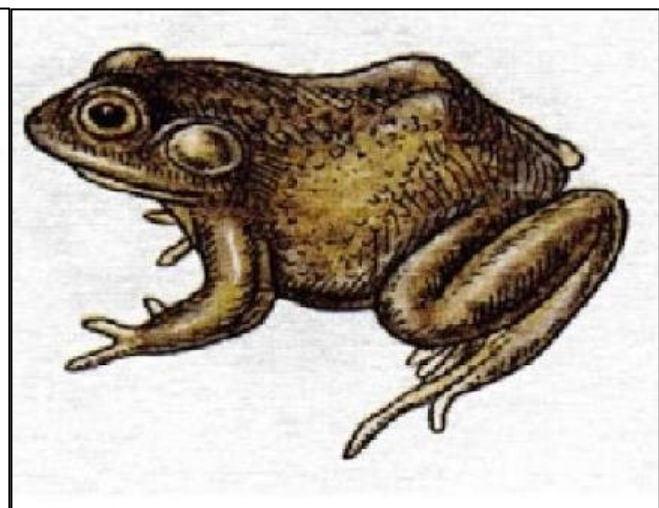
E



F



G

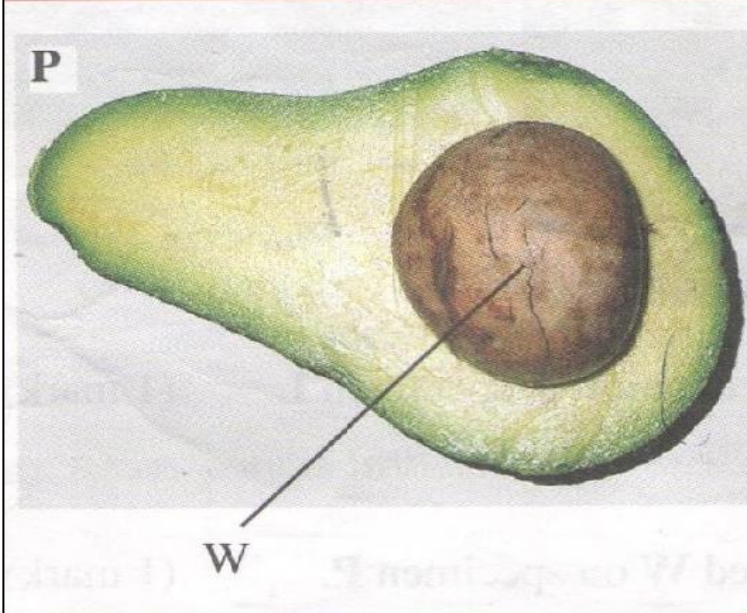
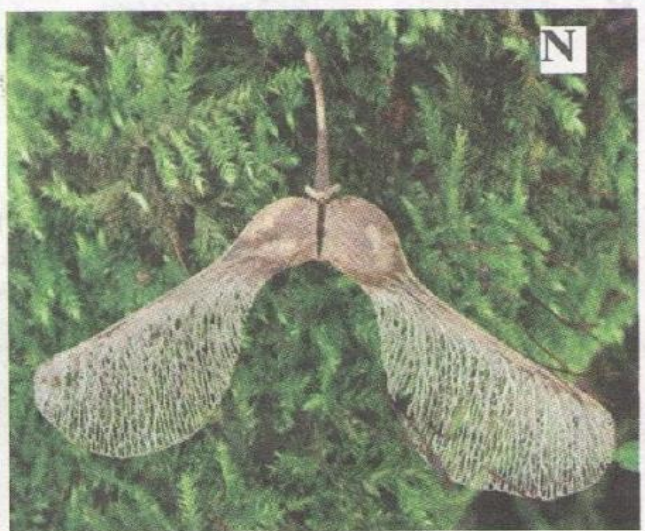
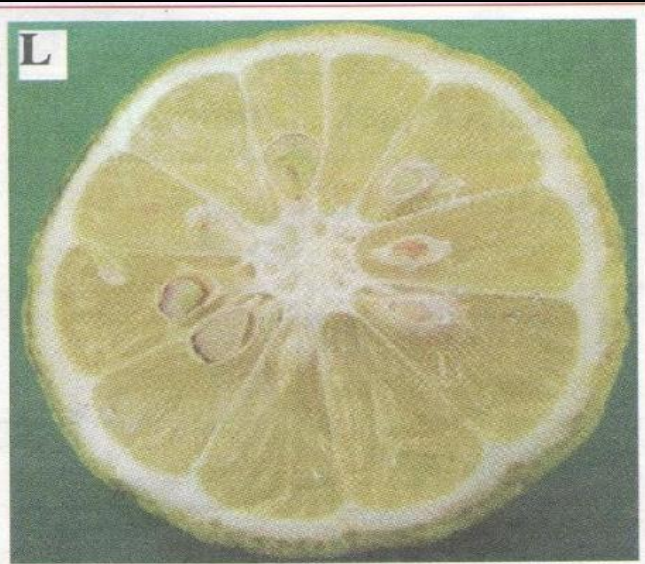


H

1. (a) Animals with a backbone Go to 2
 (b) Animals without a backbone Go to 5
2. (a) Animals with wings..... Eagle
 (b) Animals without wings go to 3
3. (a) Animals which live in water all the time..... go to 4
 (b) Animals which live in water some time..... Frog
4. (a) Animals with fins Fish
 (b) Animals without fins Turtle
5. (a) Animals with legs Go to 6
 (b) Animals without legs go to 7
6. (a) Animals with six legs Butterfly
 (b) Animals with eight legs Spider
7. (a) **Animals** with a shell..... Snail
 (b) Animals without a shell..... go to 8
8. (a) Animals with a jelly-like body go to 9
 (b) Animals without a jelly-like body Starfish
9. (a) Animals with a segmented body Earthworm
 (b) Animals without a segmented body Octopus

SPECIMEN	STEP FOLLOWED	IDENTIFY
A		
B		
C		
D		
E		
F		
G		
H		

3. Below are photographs of specimens obtained from plants. Examine the photographs.



a) In the table below name the mode of dispersal and the features that adapt the specimens(s) to that mode of dispersal. **(12marks)**

Specimen	Mode of dispersal	Adaptive feature
K		
L		
M		
N		
P		
Q		

b) i) Label any two parts on specimen (L (on the diagram) **(2mks)**

ii) State the type of placentation in specimen L. **(1mk)**

.....

.....

c. Name the structure labelled W on specimen P. **(1mark)**

.....

.....

KCSE NATIONAL MOCKS

BIOLOGY PRACTICAL

TRIAL 7 EXAM

Confidential

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INSTRUCTIONS

Each Candidate will Require the following:-

- a) 20mls of solution L*
- b) 4 test tubes in a test tube rack.*
- c) Benedict's solution*
- d) Iodine solution*
- e) 1% copper sulphate*
- f) Sodium hydroxide (10%)*
- g) DCPIP*
- h) Source of heat/water bath*
- i) Test tube holder*
- j) Visking tubing 8 cm long*
- k) Thread/string 2 pieces 10cm long each.*
- l) 50 mls beaker*
- m) Distilled water*
- n) 10mls measuring cylinder*

NB Solution L contains glucose and ascorbic acid dissolved in water

KCSE NATIONAL MOCKS

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 **1¾ hours** allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus that you may need.
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FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. (a) You are provided with a solution L. Using the reagents provided; determine the food compounds in L. Fill in the table below.

FOOD COMPOUND	PROCEDURE	OBSERVATION	CONCLUSION

(b) Place 10mls of solution L in a visking tubing. Tie both ends and place it in 50mls of distilled water contained in a beaker. Leave the set up for 20 minutes and make observations.

(i) Observations. (1mark)

.....
.....

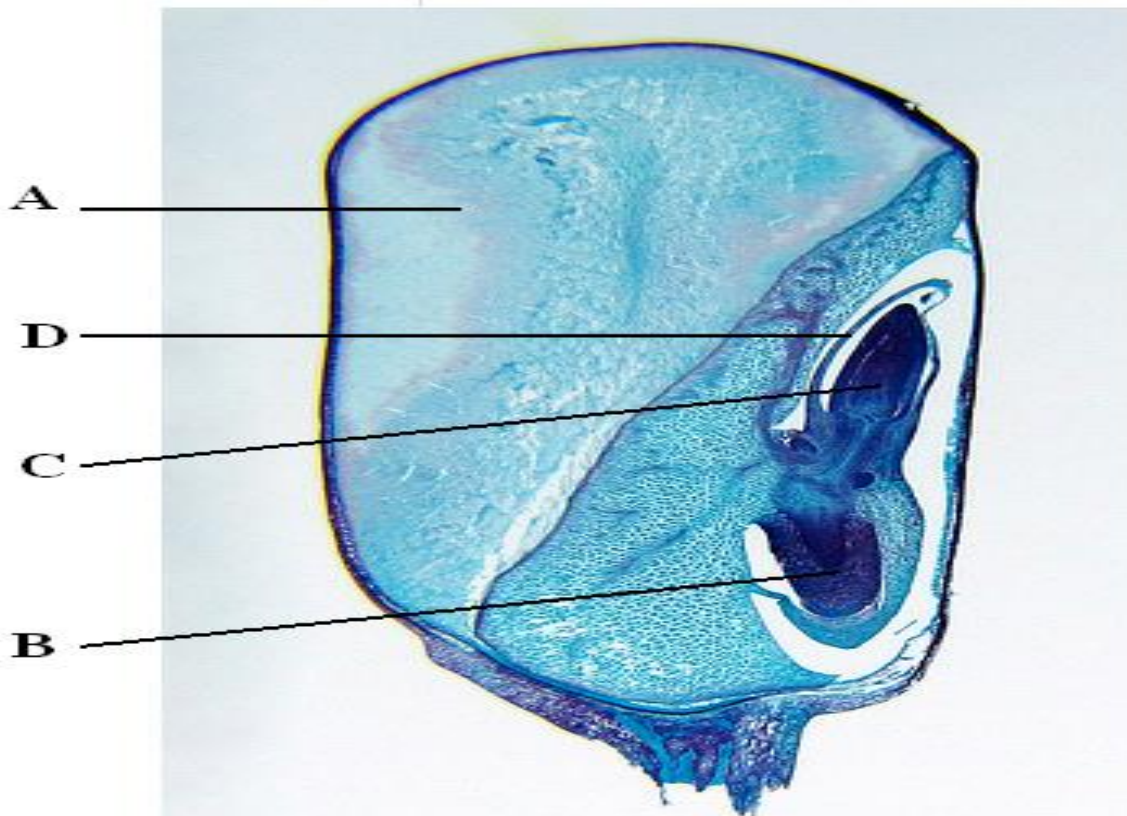
(ii) Account for the observation in b (i) above. (2marks)

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

(iii) Give the equivalent of a visking in the bodies of living organisms. (1mark)

.....
.....

2. Study the photomicrograph of the longitudinal section of a maize fruit below and answer the questions that follow.



(a) (i) Name the parts labelled A, B, C and D. **(4marks)**

A.....

B.....

C.....

D.....

(ii) Give the role played by A and D. **(2 mark)**

A

.....
.....

D

.....
.....

(b) (i) Name the type of germination exhibited by maize grain. **(1 mark)**

.....

(ii) Place the organisms from where the photomicrograph was obtained into its

Kingdom

Division

Class

(3marks)

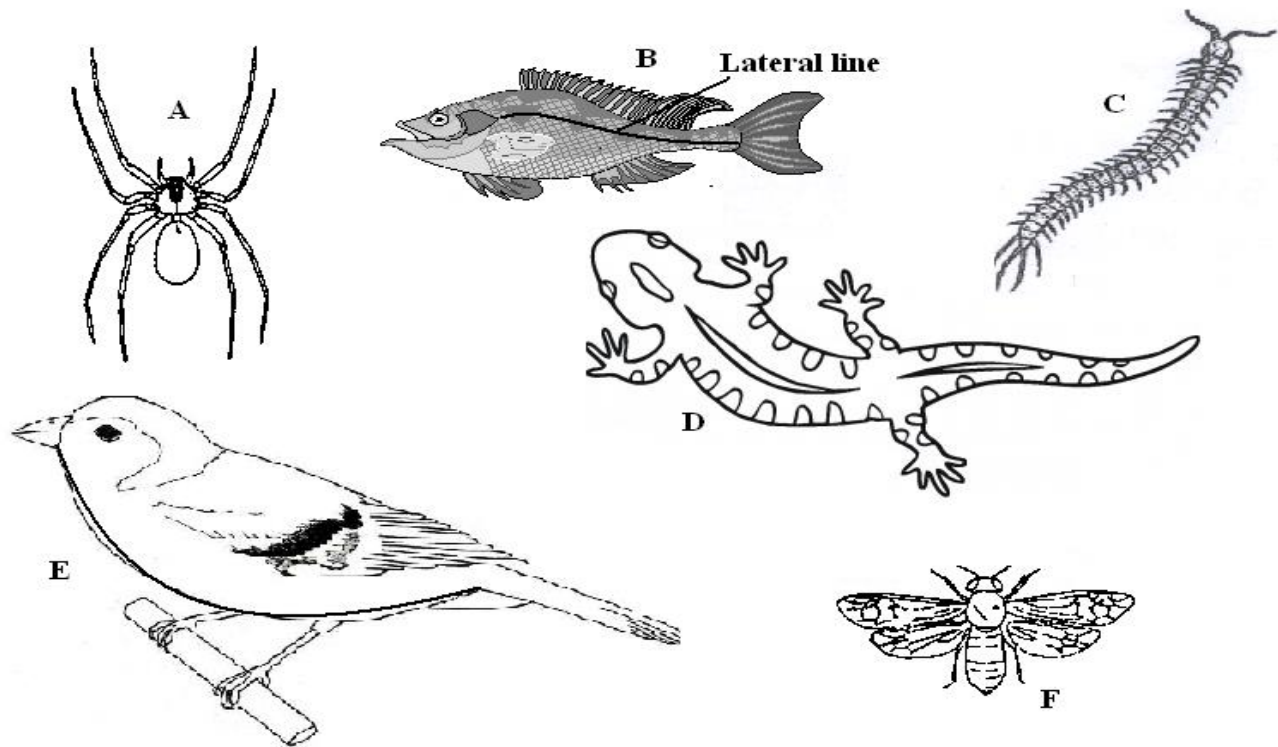
(iii) State three characteristics of members of the class identified in b (ii) above **(3marks)**

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

(c) Give one reason why the maize grain is classified as a fruit. **(1mark)**

.....
.....

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



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

1. (a) Phylum Chordata go to 2
- (b) Phylum arthropoda go to 3
2. (a) Has scales on the body go to 4
- (b) Has no scales on the body Mammalia
3. (a) Has cephalothorax Arachnida
- (b) Has no cephalothorax go to 5
4. (a) Has fins Pisces
- (b) Has no fins go to 7
5. (a) Has three pairs of legs Insecta
- (b) Has more than three pairs of legs go to 6
6. (a) Two pairs of legs per segment Diplopoda
- (b) One pairs of legs per segment Chilopoda
7. (a) Has feathers Aves
- (b) Has no feathers go to 8
8. (a) Has a tail Reptilia
- (b) 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 100mm, calculate the magnification. (2marks)

.....

.....

.....

.....

KCSE NATIONAL MOCKS

BIOLOGY PRACTICAL

TRIAL 8 EXAM

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:-

- a) Distilled water labeled solution P (50mls)*
- b) Concentrated salt solution (20%) labeled solution Q (50mls)*
- c) Onion bulb –one per student labeled K*
- d) Scapel*
- e) Petridish – Labelled R*
- f) Ruler 30cm*

KCSE NATIONAL MOCKS

BIOLOGY

TRIAL 8 PRACTICAL

TIME: 1 ¾ HOURS

NAME..... **INDEX NO**.....

SCHOOL..... **SIGN**.....

DATE.....

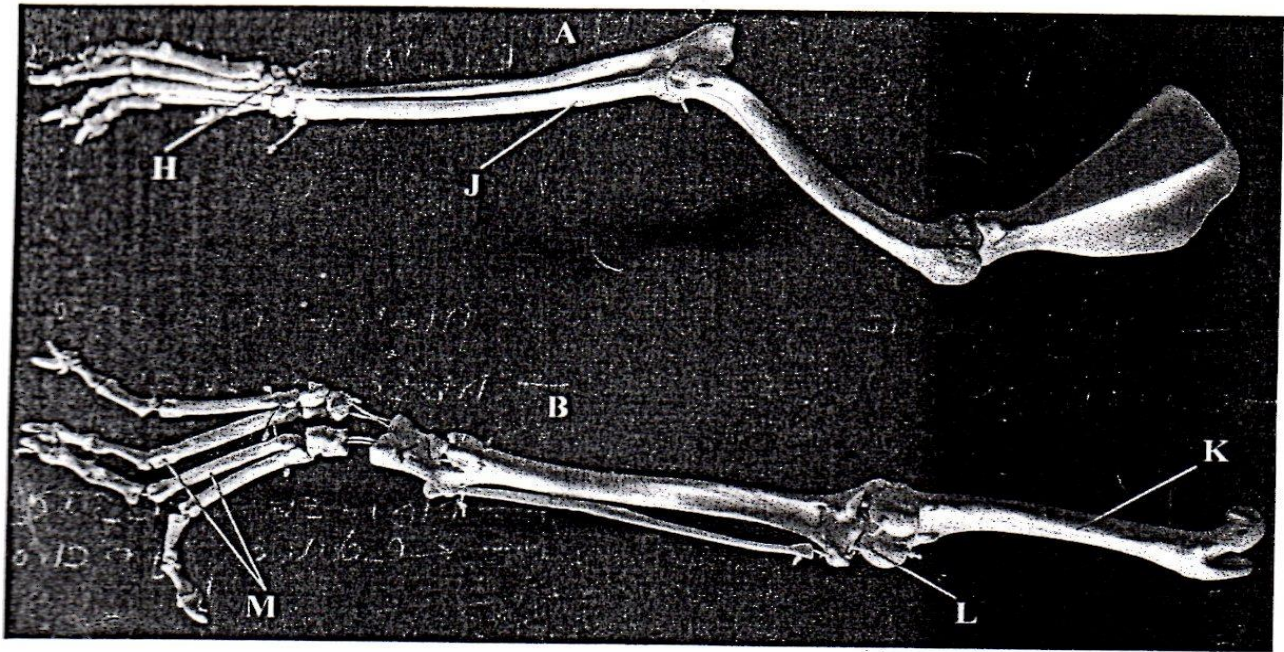
INSTRUCTIONS TO CANDIDATES

- 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 **1¾ hours** allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus that you may need.
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FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. The photograph below shows two (A and B) skeletal limbs of a certain mammal



(a) (i) Which of the two (A and B) skeletons represents a forelimb? (1mk)

.....

(ii) State two features observable on the Skeleton to confirm your answer in (a) (i) (2mks)

.....

.....

(b) Name the bones labeled J, K and M

J (1mk)

.....

K (1mk)

.....

M (1mk)

.....

(c) Which bone forms the joint with the bone labeled K of the anterior end? (1mk)

.....

(d) Name the type of joint formed at the part labeled H and L (1mk)

H.....

L.....

(e) Apart from bones, state the function of any two other components of a joint. (4mks)

Component

Function

.....

.....

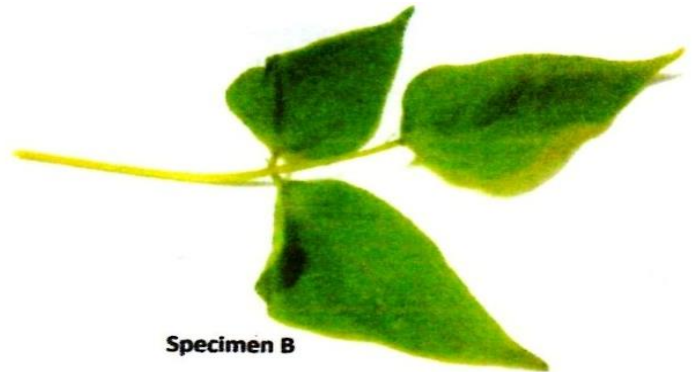
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2. The diagrams below represent leaves of certain plants



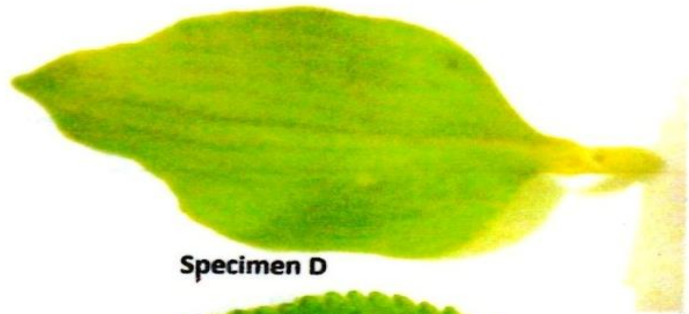
Specimen A



Specimen B



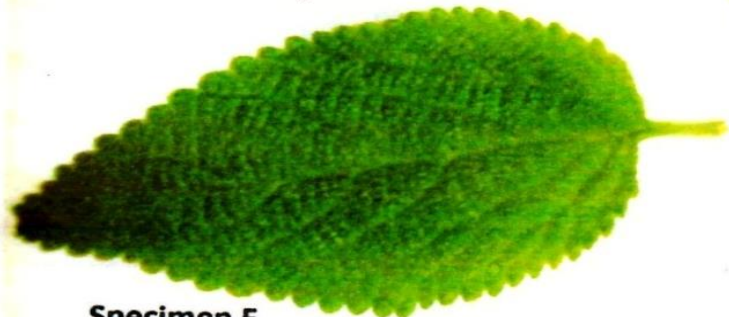
Specimen C



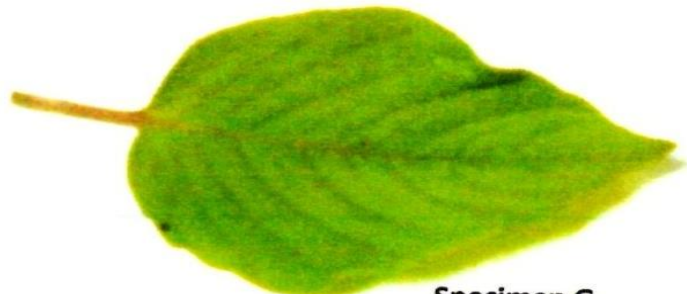
Specimen D



Specimen E



Specimen F



Specimen G

(a) Use the above specimen to complete the dichotomous key below (2mks)

1. (a) Leaf simple..... go to 2
 (b) Leaf compound.....go to 4

2. (a) leaf with parallel veins.....wandering jew
 (b) Leaf with net veins..... go to 3

3. (a) leaf with smooth margin.....Devils horse whip
 (b) Leaf with _____.....Tick berry

4. (a) Leaf trifoliate.....go to 5
 (b) Leaf with more than three leaflets..... go to 6

5. (a) Leaf with sharp tips.....Bean
 (b) Leaf with rounded tips.....Oxalis

6. (a) Leaf pinnate.....Cassia
 (b)Leaf _____.....Accacia

(b) Use the dichotomous key above to fill the table below (14mks)

SPECIMEN	STEPS	IDENTITY
A		
B		

C		
D		
E		
F		
G		

3. You are provided with a specimen labeled K and solution labeled P and Q. Cut the specimen into two halves.

(a) (i) Name the type of reproduction exhibited by specimen K (1mk)

.....

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

.....

.....

Using specimen K, remove some of the inner leaves. Cut the leaves along their lengths into nine strips equal length. Each strip should be about 2mm wide. Place three strips into the solution labeled P, place another three strips into the solution labeled Q and leave the last three strips in a petri dish labeled R. Allow the experiment setup to stand for 10 minutes.

(b) Use your fingers to feel the texture of the strips. Record your observations **(2mks)**

i) Strips in solution P

.....
.....

ii) Strips in solution Q

.....
.....

(c) Account for the texture of the strips in the solution Q **(4mks)**

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

(d) **Suggest** the concentration of solution P in relation to the cell sap in the strips of the specimen.

Give a reason for your answer **(1mk)**

.....
.....

(e) State the aim of the setup R **(1mk)**

.....
.....

END.

KCSE NATIONAL MOCKS

BIOLOGY PRACTICAL

TRIAL 9 EXAM

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INSTRUCTIONS

Each Candidate will require the following:-

- 1. 4 test tubes and a test tube rack*
- 2. Iodine solution – supplied with dropper*
- 3. 10cm visking tubing labeled J*
- 4. Piece of string 20cm long*
- 5. 10cm³ solution of a mixture of soluble starch and glucose labeled K*

N/B. 30g glucose mixed with 3g starch then add 100cm³ water and heat to boil then cool.

- 6. 500 ml beaker*
- 7. Adequate distilled water/ clean rain water*
- 8. Benedict's solution*
- 9. Means of heating/ Bunsen burner*
- 10. Measuring cylinder – 10 ml*
- 11. A scalpel.*
- 12. A dry bean seed labeled S₁.*
- 13. A bean seedling labeled S₂.*
- 14. A maize seedling labeled S₃.*

Specimen S₂ and S₃ should be ready 1 week before the exams and must have the seeds intact.

KCSE NATIONAL MOCKS

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
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FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

1. You are provided with visking tubing labeled **J**, a piece of thread and a solution labeled **K**.

Dip the visking tubing in distilled water to moisten it, open it, 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 20 minutes. Record your observations after 20 minutes.

(a) (i) Observations (1mk)

.....

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

.....

(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.

I. Visking tubing

(4mks)

FOOD TEST	PROCEDURE	OBSERVATIONS	CONCLUSION
Starch			

Reducing sugars			
-----------------	--	--	--

II. Beaker

(4mks)

FOOD TEST	PROCEDURE	OBSERVATIONS	CONCLUSION
Starch			
Reducing sugars			

(c) Explain observations in the visking tubing and Beaker in 1(b) above.

(3mks)

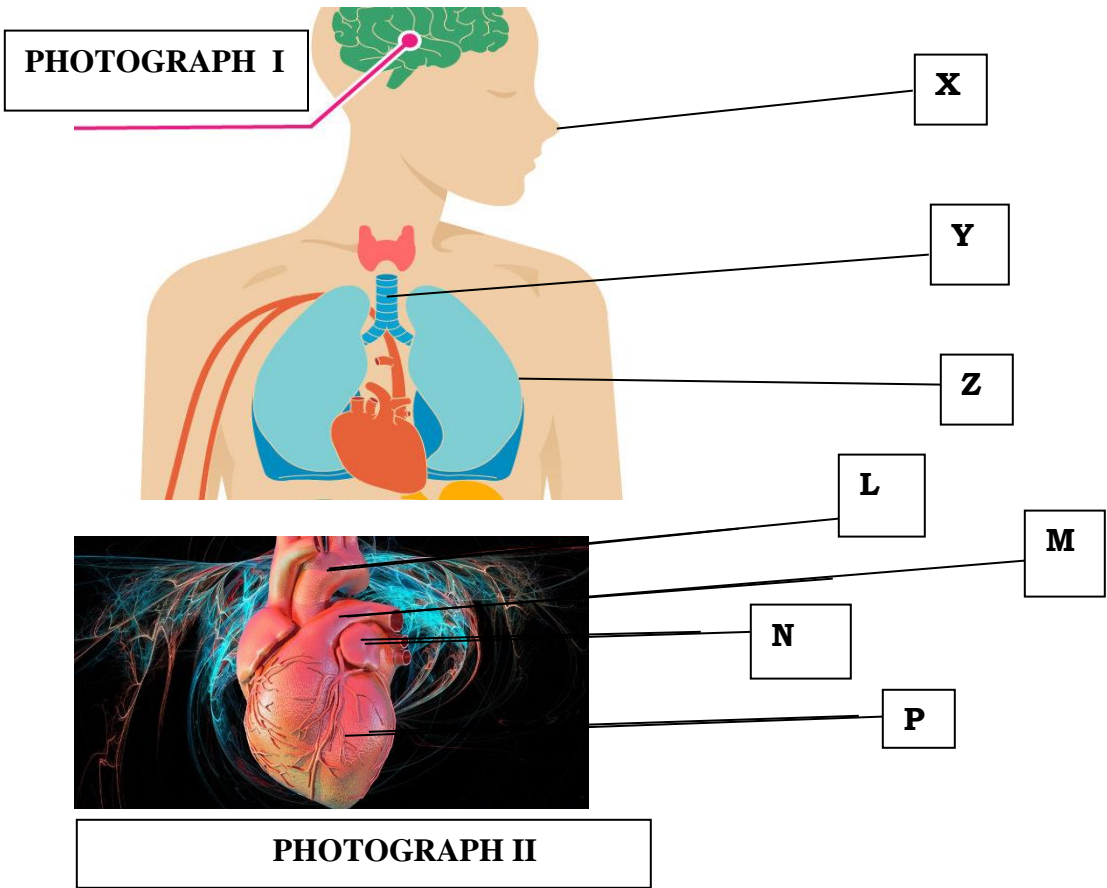
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2. The photographs I and II below illustrate parts of mammalian systems. Study them and answer the questions that follow.



(a) Identify the two mammalian systems shown above. (2mks)

.....

.....

.....

(b) Name the membrane that covers part marked P and Z. (2mks)

P.....

Z.....

(c) Describe two ways by which organ P and Z are protected. (2mks)

.....

.....

.....

(d) How is the part labelled Y adapted to perform its function. **(2mks)**

.....

.....

.....

(e) Identify the part labelled N. **(1mk)**

.....

(f) State the difference in the content of blood in L and M. **(1mk)**

L	M

(g) State the role of the inner part of X in ensuring a healthy system. **(2mks)**

.....

.....

3. You are provided with specimens labeled S₁, S₂ and S₃

(a) Using a scalpel blade split S₁ longitudinally and draw a well labeled diagram to show the internal structures. **(4mks)**

(b) With a reason, state the class of the plant from which specimen S₁ was obtained.

(a) Class **(1mk)**

.....

Reason **(1mk)**

.....

.....

(c) Specimen S₂ is a germinated seedling of S₁.

In the table below, name three structures of S₁ and identify the structures they developed into in specimen S₂ **(3mks)**

Structure in S ₁	Structure developed into, in S ₂
1 _____	_____
2 _____	_____
3 _____	_____

(d)i) Using specimens S₂ and S₃ ,name the type of germination. **(2mks)**

S₂
.....

S₃
.....

ii) Give a reason for your answer in S₃ above. **(2mks)**

.....
.....

iii) Account for the type of germination in S₂ **(2mks)**

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

KCSE NATIONAL MOCKS

BIOLOGY PRACTICAL

TRIAL 10 EXAM

Confidential

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INSTRUCTIONS

Each Candidate will require the following:-

- a) Solution A about 10mls (amylase enzyme solution)*
- b) Solution B (benedict's solution)*
- c) Solution C (10 mls starch solution labeled as solution C)*
- d) NaCl solution 0.1% NaCl*
- e) 1.4% NaCl solution*
- f) Iodine solution labeled D*
- g) Means of timing. A wall clock will be appropriate*
- h) 10 ml measuring cylinder*
- i) Scalpel*
- j) Means of labeling (5 labels)*
- k) Four test tubes*
- l) Means of heating*
- m) Distilled water labeled as solution Y*
- n) Mortar and pestle*
- o) Cork borer*
- p) 2 medium irish potatoes*
- q) 20mls concentrated salt solution labeled as solution Z*
- r) 2mls hydrogen peroxide labeled as solution C*

KCSE NATIONAL MOCKS

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.
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FOR EXAMINERS USE ONLY

SECTION	QUESTION	CANDIDATES SCORE
	1	
	2	
	3	
TOTAL SCORE		

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 2cm³ of solution from test tube P in a clean test tube and add 2cm³ 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)

.....

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

i) Test tube Q

.....

ii) Test tube R

.....

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

.....

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

.....

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

S

R



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

Specimen R	Specimen S

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

.....

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)**

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)**

.....

.....

.....

.....

.....

(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)**

.....

.....

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

.....

.....

(c) Explain why:

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

.....

.....

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

.....

.....

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