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KCSE NATIONAL SCHOOLS TRIALS AND JOINT SERIES 2025

BIOLOGY PAPER 3

KABARAK HIGH
ALLIANCE BOYS
ALLIANCE GIRLS
ASUMBI GIRLS
KISII SCHOOL
KENYA HIGH
MANGU SCHOOL
MARANDA SCHOOL
MASENO SCHOOL
MERU SCHOOL
MOKASA JOINT 1
STAREHE GIRLS
STAREHE BOYS
LENANA SCHOOL
MOI GIRLS ELDORET
NAIROBI SCHOOL
FRIENDS SCHOOL KAMUSINGA

These exams have been compiled from recently done national schools' trials and joint series

KNEC COMPLIANT

GOLDLITE ONLINE SUPPLIES

Kenya Certificate of Secondary Education

KCSE TOP NATIONAL SCHOOLS TRIAL SERIES 2025

Name ……**Admission number** ……
Candidate's Signature……**Date**……

KABARAK HIGH SCHOOL

BIOLOGY PAPER 3

(Practical)

Time: 1 hour 45 minutes

- ***Write your name, Index Number in the spaces provided above.***
- ***Write the date of examination in the space provided above.***
- ***Answer ALL the questions in the spaces provided below each question in the question paper.***

FOR EXAMINER'S USE ONLY

Question	**Maximum score**	**Candidate's score**
1	**19**	
2	**10**	
3	**14**	
TOTAL	**40**	

1. (a) You are provided with the following:

- 20% glucose solution
- 2 Visking tubings
- 30ML of cold distilled water
- 30 ml warm distilled water
- 2 beakers
- thread
- Means of labeling.

Procedure I

i. Tie one end of each of the visking tubings tightly using a piece of thread. Half fill one of the visking tubing with 20% glucose solution and then tie the top tightly.

ii. Immerse the visking tubing into a beaker containing warm water and label the beaker as A.

iii. Into the second visking tubing, pour 20% glucose solution and tie tightly at the top. Immerse the visking tubing in the breaker containing ice cold water and label the beaker as B.

iv. Leave the set ups undisturbed for 10 minutes, remove the visking tubings and observe.

(a)(i) State the observation made in Visking tubing from the beaker labeled A (1mrk)

.....
.....

(ii) Account for the observation made. (2mks)

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

(b) (i) State the observations made in visking tubing from the beaker labeled B (1mrk)

.....

Procedure II

(b) You are provided with solution J and K.

(i) Carry out Benedict's and iodine tests on solution J. (3mks)

Tests	Procedure	Observation	Conclusion

(ii) Label two test tubes as test tube 1 and test 2.In test tube 1 put equal volumes of about 2ml of each of solutions J and K .In test tube 2 put solutions J and an equal amount of K which has been boiled for 10 minutes. Place the two test tubes in a water bath maintained at between 35-39^{0}c for 30 minutes. After 30 minutes, take a small amount of contents from each of the two test tubes and carry out Benedict's and iodine test. (4mks)

Tests		Observations	Conclusion
Test tube 1	Benedict's		
	Iodine		
Test tube 2	Benedict's		
	Iodine		

C (i) Explain the observation made in: (2mks)

Test tube 1

……
……
……..

Test tube 2

……
……
……

(ii) Name the process that took place in test tube 1 (1mk)

……

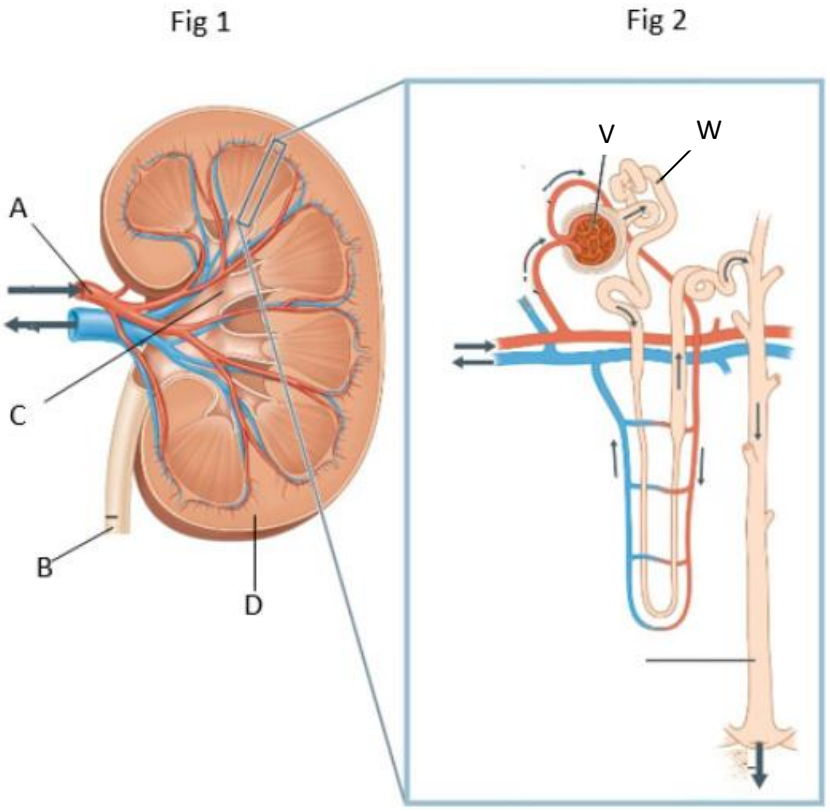
(ii) How else could the process which took place in test tube A be made to take place without the presence of solution K. (1mk)

……..

(ii) Identify solution K. (1mk)

……

2. Below is a diagram of part of the excretory system in a certain animal. Examine them and answer the questions that follow.



(a) (i) Name the parts labeled A, B, C and D in figure. (4mks)

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

(ii)(a) Identify the process that takes place in the structure labeled V in figure II (1mk)

……

(b)State two sources of the condition that bring about the process named in (ii) (a) above. (2mks)

……
……

(iii) State three adaptations of the structure labeled W to its functions (3mks)

……
……
……
……

3. You are provided with specimens **R** and **S** which are reproductive structures found in some organisms. Use it to answer the questions below.

(i)(a)Name the sub division of the plants from which the specimens were obtained from.(1mk)

.....

(b) Name the classes of the plants from which the specimen R and S were obtained and give a reason for each. (4mks)

R

.....

Reason

.....

S

.....

Reason

.....

(ii)(a) What is the likely agent for specimen labeled R? (1mk)

.....

(b) Give two reasons for your answer in (ii) (a) above (2mks)

.....
.....

(iii) Remove the gynoecium from specimen R, observe using the magnifying lens provided and draw. (4mks)

(iv)Give two adaptations of flower in specimen S to its agent of pollination. (2mks)

……
……
……

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Name …… **Admission number** ……

Candidate's Signature……**Date**……

FRIENDS SCHOOL KAMUSINGA TRIALS

231/3

BIOLOGY (practical)

PAPER 3

INSTRUCTIONS TO THE CANDIDATES.

a) *Write your name and index number in the spaces provided above.*

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

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

d) *You are required to spend the first 15 minutes of the 1 ¾ hours allowed for the paper reading the whole paper carefully before commencing your work.*

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

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

g) *Candidates should answer all the questions in English*

FOR EXAMINER'S USE ONLY

Question	Maximum score	Candidate's score
1	15	
2	13	
3	12	
Total Score	40	

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ANSWER ALL THE QUESTIONS IN THE SPACES PROVIDED

1a) You are provided with specimen W measure and cut 2cm x 1cm x 1cm of specimen W to have a piece of potato tissue. Repeat this to obtain three other pieces.
Put 25ml of solution X in a beaker labelled X and 25ml of solution Y in a beaker labelled Y.
Place two pieces in a beaker containing solution Y and the other two in a beaker containing solution X. Leave the experiments for 45 minutes. After 45 minutes remove the cylinders and mop them up with a tissue paper. Measure and record the length of each cylinder in the table below.
(8marks)

Piece of potato in solution		**Initial length**	**Final Length**	**Average length**	**% change in length**
X	Piece 1	20mm			
	Piece 2	20mm			
Y	Piece 1	20mm			
	Piece 2	20mm			

b) Account for observations made in solution

(i) X (2marks)

(ii) Y (2marks)

2.You are provided with the following with the following

- A light microscope
- Slide and coverslip
- A piece of bulb onion
- Mounting needle
- Pair of forceps
- A petri dish

Procedure 1

{a) Place the transparent ruler across the field of view. Using low-power objective lens, measure the diameter of the field of view.

Diameter of the field of the field of view (1 mark)

Procedure 2

Peel epidermis from the inner side of the onion bulb leaf using pair of forceps and place it in a petri dish containing water. Remove the epidermis from water, cut 1cm by 1cm and place it on a slide, cover it with coverslip and stain the specimen using iodine solution. Remove the ruler and observe the slide containing onion epidermis using low power objective lens. Count the number of epidermal cells lying length to length along the diameter of the field of view.

(b) Number of cells along the diameter of field of view are (1mark)

(c) Calculate the average length of a single cell in micrometers. Show your working (2marks)

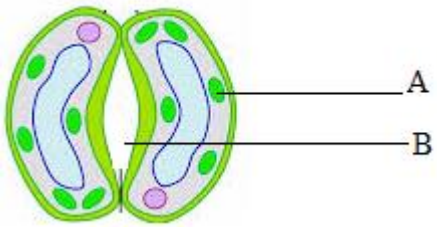
(d) Work out the magnification of the image. Show your working. (1marks)

(e) i) Why was it necessary to stain the specimen? (1marks)

ii) Describe how the staining of the above specimen is achieved (2marks)

f) Draw a large well-labelled diagram of one of the cell observed in procedure 2 above (4 marks)

g) Below is a diagram of another epidermal cells under higher magnification. Name the cells and name parts labelled A and B (3marks)



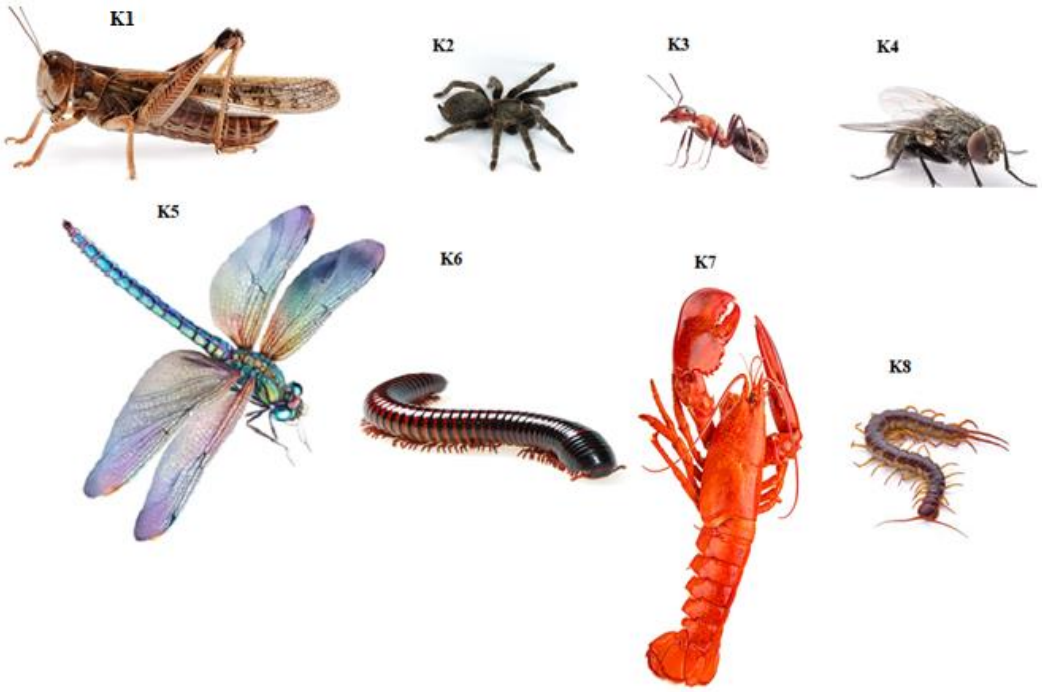
Identity

A

B

h) How does the above cell differ from the cell observed in procedure 2 above? (1mark)

3.The photographs below are of organisms belonging to the phylum Arthropoda, examine them and answer the questions that follow.



(a) complete the dichotomous key below. (2marks)

1a. Animal with three pairs of legs……..go to 2

b. Animal with more the three pairs of legs……go to 5

2a. Animals with wings…….go to 3

b. Animal without wings……...……Hymenoptera

3a. _____……..……..Diptera

b. Animal with two pairs of wings……...……go to 4

4a. Fore wings hard……...……Orthoptera

b. Fore wings membranous……..……..Odonata

5a. _____…….go to 6

b. Animal with more than four pairs of walking legs……go to 7

6a.Animal with antennae.…….Crustacea

b. Animal without antennae……Arachnida

7a. Animal with one pair of legs in each body segment…….Chilopoda

b. Animal with two pairs of legs in each body segment…….……Diplopoda

b) Use the dichotomous key given below to identify each animal specimen and give the sequence of steps followed in identifying each specimen in the table below. (10marks)

Specimen	Steps	Identity
K1		
K2		
K3		
K4		
K5		

c) With a reason, name the class to which organism K6 belong.(2 marks)

Class –

Reason –

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Name …… **Admission number** ……

Candidate's Signature……**Date**……

KISII SCHOOL TRIALS

231/3

BIOLOGY (practical)

PAPER 3

INSTRUCTIONS TO CANDIDATES

- *Write your **name, Admission number** and **CLASS** in the spaces provided above*
- *This paper consists of three questions*
- *Answer **all** the questions in the spaces provided.*
- *You are required to spend the first 15 minutes of the $1\frac{3}{4}$ Hours allowed for this paper reading through all the questions before commencing your work.*
- *This paper consists of 6 printed pages.*
- *Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.*

For Examiners Use Only

Question	Maximum score	Candidate's score
1	16	
2	11	
3	13	
Total Score	40.	

1. You are provided with a suspension labelled M.

a) Using the reagents provided only, test for the food substances present in the suspension. In the table below, record the food tested, procedure, observation and conclusions. 12 marks.

Food TEST	Procedure	Observation	Conclusion

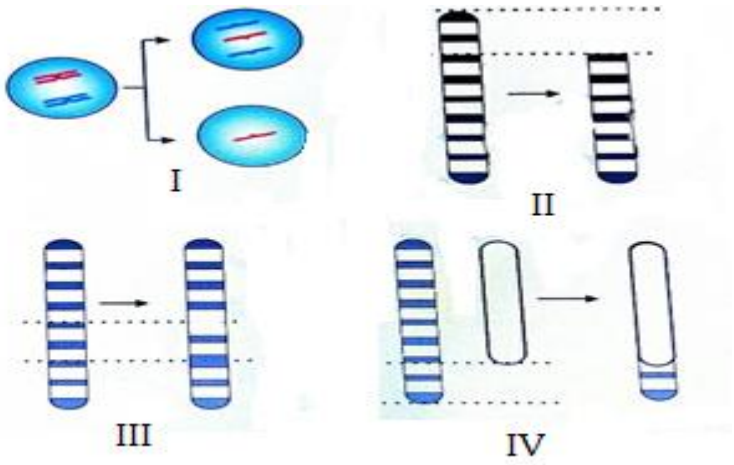
b) Name two enzymes that may be required to digest suspension M in the alimentary canal in human. (2mark)

c) State role of the following in the experiment. (2marks)

(i) Sodium hydrogen carbonate

(ii) Dilute hydrochloric acid

2. Experimental evidence shows that most mutations results to variations among organisms. The illustrations I, II, III and IV below show different possible types of chromosome mutations. Study them keenly.



a) Identify the types of chromosome mutations illustrated. (4 marks)

Illustration	Name of mutation
I	
II	
III	
IV	

b) State the effect of the mutation illustrated in III. (1 mark)

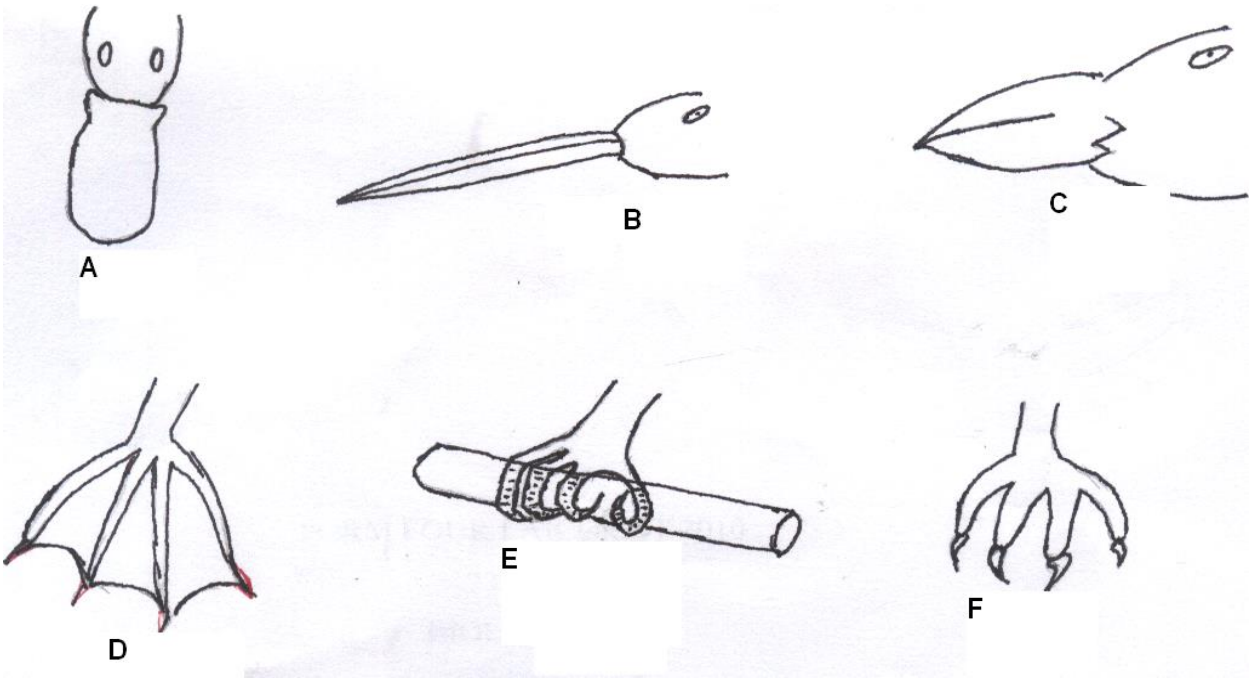
c) In most cases, the mutation in II could be lethal. Explain. (2 marks)

d) During which stage of mitosis does the mutation in I above occur? (1 mark)

e) i) Define a mutation (1 mark)

ii) Give two possible environmental mutagens. (2marks)

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



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

Food	Reason

A

B

C

F

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

Part	Habitat	Reason
D		
E		

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

The type of evolution (2mks)

Reason

(ii) Suggest the significance of the above named type of evolution for the organism (1mk)

c. (i) Explain briefly the meaning of analogous structures (1mk)

(ii) Give one example of analogous structure (1mk)

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Name …… **Admission number** ……

Candidate's Signature……**Date**……

MARANDA SCHOOL TRIALS

231/3

BIOLOGY (practical)

PAPER 3

INSTRUCTIONS TO THE CANDIDATES.

a) *Write your name and index number in the spaces provided above.*

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

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

d) *You are required to spend the first 15 minutes of the 1 ¾ hours allowed for the paper reading the whole paper carefully before commencing your work.*

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

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

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FOR EXAMINER'S USE ONLY

Question	Maximum score	Candidate's score
1		
2		
3		
Total Score	40	

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1. (a) You are provided with specimen A

i) Name the fruit type that the specimen belongs to (1mark)

ii) Give a reason (1mark)

iii) Make a transverse section on specimen A and label the parts. (3marks)

iv) State the type of placentation of fruit A (1mark)

b) Squeeze out the juice from the two halves of specimen A into a small beaker. Using part of the juice and the reagents provided only, test for the food substances in the juice. (6marks)

Reagent	**Procedure**	**Observation**	**Conclusion**
DCPIP			
Benedict's Solution			

c) Transfer 5ml of lime water in to a test tube. Insert a straw in the lime water in the test tube and blow air in it.

i) State the observation made (1mark)

ii) What was the aim of the experiment? (1mark)

iii) Account for the observation (1marks)

iv) What biological process produces the gas being tested in this experiment (1mark)

v) What physiological process is involved in the removal of the gas from the body? (1mark)

2. The photographs below were taken from a grassland ecosystem. Examine them carefully

i) Construct a food chain from the organism in the photographs above. (1mark)

ii) Name the trophic level occupied by the antelope giving a reason for your answer. (2 marks)

iii) Using observable feature only, name the class in which lion and antelope belong giving a reason. (2 marks)
class

Reason.

iv) With a reason, identify which of the three organisms has the highest biomass. (2 marks)

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

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

State your magnification (4mks)

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

Class(1mk)

Reason(1mk)

c. Specimen S_2 is a germinated seedling of S_1.In the table below, name three structures and say which structure in S_1 developed into the structure in S_2. (3MKS)

Structure in S_1	**Structure in S_2**

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

S1 (1mk)

S_3 (1mk)

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

iii.Account for the type of germination in :-

S_1 (1mk)

S_3(2mks)

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Name …… **Admission number** ……

Candidate's Signature……**Date**……

STAREHE BOYS CENTER SCHOOL TRIALS

231/3

BIOLOGY (practical)

PAPER 3

INSTRUCTIONS TO THE CANDIDATES.

a) *Write your name and index number in the spaces provided above.*

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FOR EXAMINER' S USE ONLY

QUESTION	MAX SCORE	CANDIDATE'S SCORE
1	12	
2	13	
3	15	
TOTAL	40	

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

Food substance	**Procedure**	**Observation**	**Conclusion**

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

Specimen	**Observation**
Specimen **Q**	
Specimen **R**	

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

b) i) Using the remaining portion of **specimen Q**, Cut 2 other pieces measuring 1cm by 1cm ,Crush them separately to form a paste and put them in boiling tubes labelled **A** and **B**.

To the paste in boiling tube labelled **A**, add 5mls of solution **X**. Record the observation in the table below.

To the paste in boiling tube labeled **B** add 10mls of distilled water and boil for 5 minutes then allow it cool then add 5mls of solution **X**. Record the observation in the table below. **(2 marks)**

BOILING TUBE	**OBSERVATION**
A	
B	

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

(4 marks)

Boiling tube **A**

……
……
……

Boiling tube **B**

……
……
……

iii) Name the biological substance being investigated and its significance to the living tissues

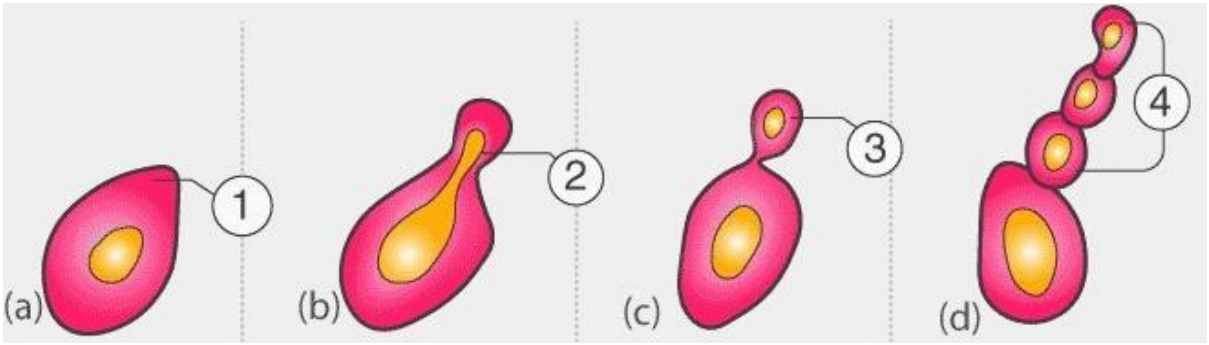
(2 marks)

Biologicalsubstance……

Significance……..……
……
……

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

3. The diagrams below show a method of reproduction.



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

……

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

……
……
……

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

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

(i) Androecium

……
……
……
……

(ii) Gynoecium (3mks)

……
……
……
……
……

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

……

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

……
……

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ALLIANCE GIRLS HIGH SCHOOL TRIALS

231/3

BIOLOGY (practical)

PAPER 3

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Question	**Maximum score**	**Candidates score**
1	17	
2	09	
3	14	
Total score	**40**	

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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 ----------

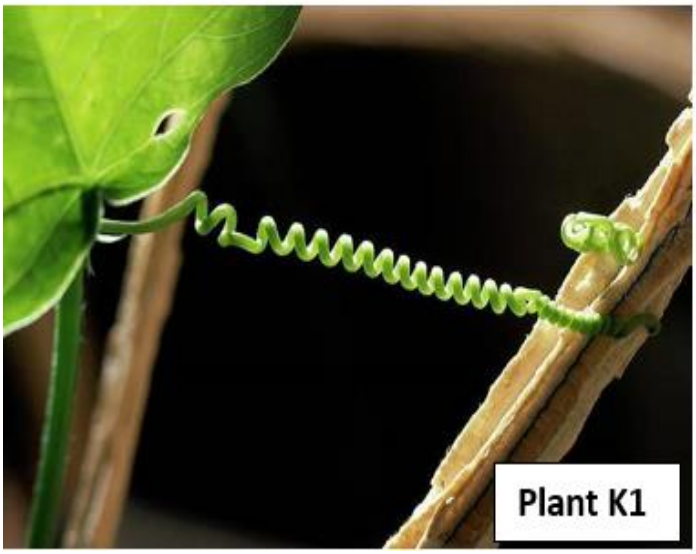
(c i). Make a longitudinal section of specimen P. Draw a well-labelled diagram of one half with all its Contents intact. (4mks)

(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.



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 preceed and succeed organism S in the life cycle. (2mks)

Preceeding stage

Succeeding stage.

---

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

---

c) Name the gaseous exchange system of orgaism **S**. Give a visible featuret 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) Juvinile hormone.

---

ii) Moulting stimulating hormone.

GOLDLITE ONLINE SUPPLIES

Kenya Certificate of Secondary Education

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Name …… **Admission number** ……

Candidate's Signature……**Date**……

ALLIANCE BOYS HIGH SCHOOL TRIALS

231/3

BIOLOGY (practical)

PAPER 3

INSTRUCTIONS TO THE CANDIDATES.

a) *Write your name and index number in the spaces provided above.*

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

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FOR EXAMINER'S USE ONLY

Question	Maximum score	Candidate's score
1	15	
2	13	
3	12	
Total Score	40	

CONTACT US ON:

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1. You are provided with the following;
    i) Hydrogen peroxide
    ii) Specimen K
    iii) Pestle and mortar
    iv) 4 test tubes
    v) A scalpel
    vi) Source of heat
    vii) Test tube holder

Using a scalpel, obtain three peeled cubes from specimen K measuring about 1cm x 1cm x 1cm. For the first cube, you are required to boil it in water for five minutes. For the second cube, you are required to crush it into a paste. For the last cube, you are required to use it as it is.

Label three test tubes A, B and C and put 2ml of hydrogen peroxide in each test tube. To test tube A, add the boiled cube and record your observation.
To test tube B. add the crushed paste and record your observation.
To test tube C, add the unboiled cube remaining and record your observation.

a) Complete the table below (3mks)

Test tube	**Observation**
A	
B	
C	

b) Explain your observation in test tube A (1mk)

……

……

……

c) Between test tubes B and C, in which test tube was the volume of foam produced the highest? Explain (3mks)

……

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……

……

d) Apart from temperature, state four other factors that affect the rate of enzyme controlled reactions (4mks)

……

……

……

……

e) State any 4 properties of enzymes (4mks)

……

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……

2. You are provided with solution labeled **J**, use the reagents provided to test for the food Substances.

(a) Use the iodine solution to test for the food substance in solution **J**.

Food substance (1 mark)

……

Procedure (1 mark)

……

……

……

……

Observation (1 mark)

……

……

Conclusion (1 mark)

……

……

……

……

(b) Use Benedict's solution to test for the presence of the food substance in solution **J**.

Food substance (1 mark)

……

Procedure (1mark)

……

……

……

Observation (1mark)

……

……

……

Conclusion (1 mark)

……

……

……

(c) Use DCPIP solution provided to test for the presence of the food substance in solution **J**

Food substance (1 mark)

……

Procedure (1 mark)

……

……

Observation (1mark)

……

……

……

……

Conclusion (1mark)

……

……

……

……

(d) When testing for non-reducing sugars explain the role of the following substances.

(i) Dilute hydrochloric acid. (1mark)

……

……

……

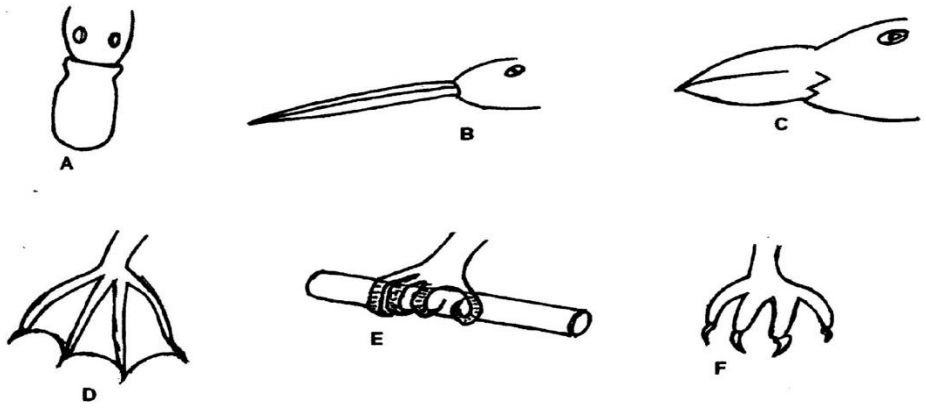
(ii) Sodium hydrogen carbonate (1mark)

……

……

……

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



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

……

……

……

……

……

……

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

……

……

……

……

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

……

……

……

……

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

……

……

……

……

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Name …… **Admission number** ……

Candidate's Signature……**Date**……

ASUMBI GIRLS HIGH SCHOOL TRIALS

231/3

BIOLOGY (practical)

PAPER 3

INSTRUCTIONS TO THE CANDIDATES.

a) *Write your name and index number in the spaces provided above.*

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

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

d) *You are required to spend the first 15 minutes of the 1 ¾ hours allowed for the paper reading the whole paper carefully before commencing your work.*

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

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

g) *Candidates should answer all the questions in English*

FOR EXAMINER'S USE ONLY

Questions	Maximum score	Candidate's score
Question 1	16	
Question 2	13	
Question 3	11	
Total score	**40**	

1. You are provided five with potato cylinders each measuring 5cm long, liquid S_1 and S_2, Hydrogen Peroxide, dilute Hydrochloric Acid, and test tubes labeled A,B and C.

a) i) Place one cylinder in a beaker containing liquid labeled S_1 and another in the liquid labeled S_2. Allow to stand for 30 minutes, then remove the cylinders, wipe them dry using blotting paper. Measure each cylinder in centimeters and record their length and texture in the table given below. (4 marks)

CYLINDER	**LENGTH IN CM**	**TEXTURE**
LIQUID S_1		
LIQUID S_2		

ii) Account for the results obtained in a (i) above (4marks)

……

……

……

b) Using a scalpel cut one of the cylinders into 5 parts each one centimeter long. Put the pieces into test tube A. Crush the other two using mortar and pestle into a paste. Divide the paste into two equal lots.

Put one lot into test tube B and the other into test tube C.

To each of the test tubes A and B add $2cm^3$ of hydrogen peroxide and to test tube C add 1 cm^3 of dilute Hydrochloric Acid, then $2cm^3$ of hydrogen peroxide. Record your observation below. (3marks)

Test tube A

……

Test tube B

……

Test tube C

……

(ii) Write a word equation for the reaction that occurs in the test tubes (1mark)

……

(iii) Account for the rate of reaction in test tube A, B and C. (4 marks)

A

……

……

B

……

……

C

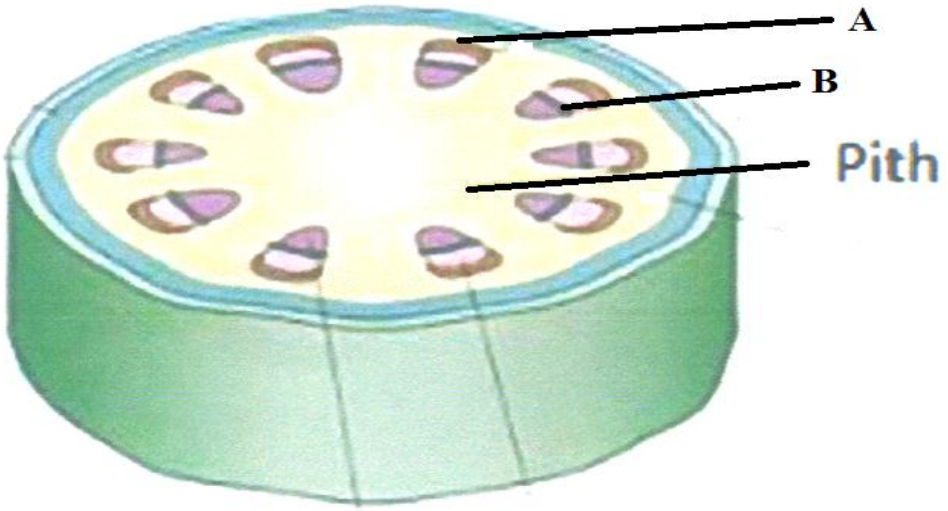
……

……

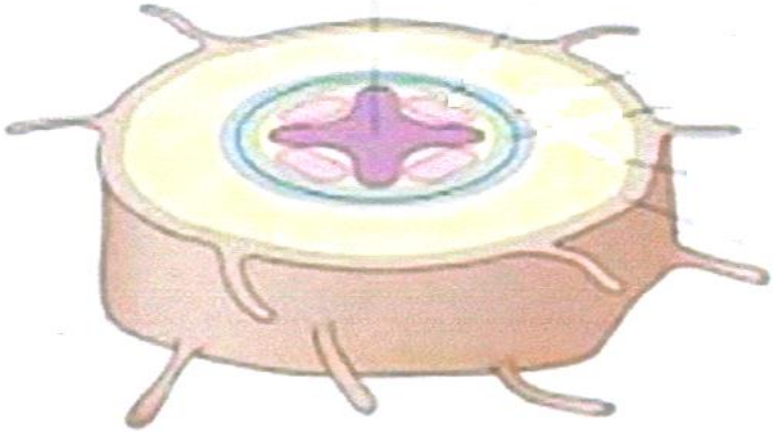
……

2. Below are sections of a dicotyledonous plant organs labeled **X** and **Y**.

X



Y



(a) Give **three** observable differences between the sections. (3 marks)

……

……

……

……

……

(b) On the diagram, label any **three** parts of section Y. (3 marks)

(c) Identify and state the functions of the parts labeled **A** and **B**. (4 marks)

A ……

Function……

……

……

B ……

Function……

……

……

(d) How would section **X** compare with that of a monocotyledonous plant? (3 marks)

……

……

……

……

……S

tudy the photographs below and answer the questions that follow.

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

……..

……..

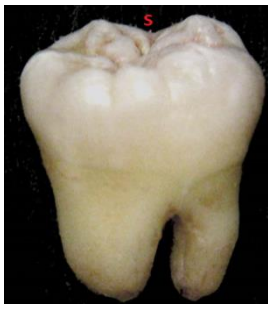
(b) Identify the dentitions exhibited in photograph **Y** and **Z** (2 marks)

Y …….

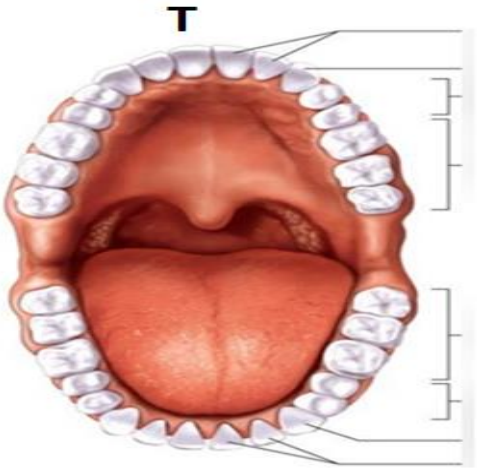
Z …….

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

S



T



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

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

……

……

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

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Candidate's Signature……**Date**……

KAPSABET BOYS HIGH SCHOOL TRIALS

231/3

BIOLOGY (practical)

PAPER 3

INSTRUCTIONS TO THE CANDIDATES.

a) *Write your name and index number in the spaces provided above.*

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

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

d) *You are required to spend the first 15 minutes of the 1 ¾ hours allowed for the paper reading the whole paper carefully before commencing your work.*

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

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

g) *Candidates should answer all the questions in English*

FOR EXAMINERS USE ONLY

QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
1	14	
2	12	
3	14	
TOTAL	40	

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1. You are provided with a fruit labelled K. You are required to cut transversely through the middle section of the fruit using the knife provided. You are to use one half of the fruit for question 1 and preserve the other half for **question 2**.

a) Cut a 1cm slice from one half of the fruit and remove the peel. Place the soft part of the fruit in a mortar and mash it into a fine paste using a pestle.

Add 10 ml of distilled water into the paste and stir the mixture, then transfer it into a beaker.

b) Using the reagents provided, carry out appropriate food tests on the mixture as you fill in the table below: (12 marks)

Food substance	Procedure	Observation	Conclusion

c) Name the deficiency disease in children that may result from feeding them on specimen K alone especially after weaning. (1mk)

……..

d) Identify the hormone responsible for ripening of the specimen K above. (1mk)

……

2. Using specimen K and M provided;

a) Identify the types of fruits and give reasons (4mks)

Specimen	Reason
K	
M	

b) State the mode of dispersal of specimen M and give a reason (2mks)

Mode of dispersal……

Reason……

c) State and explain how fruit K is formed (2mks)

……

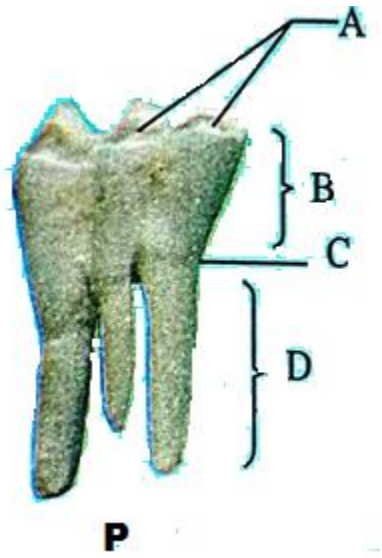
……

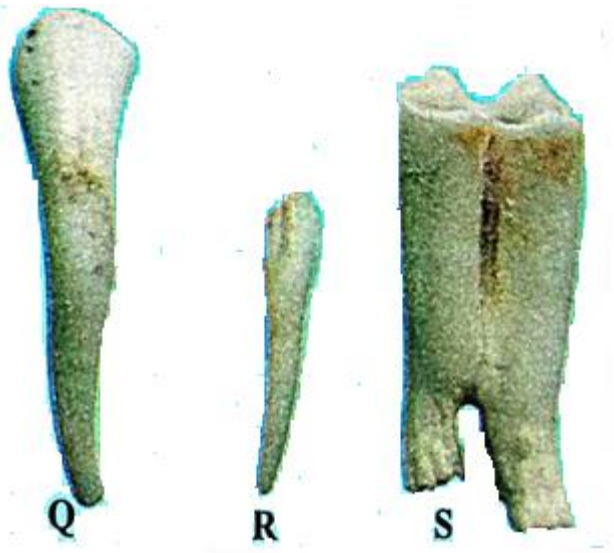
d) Draw and label fruit M (3mks

e) When a piece of specimen K was placed in hydrogen peroxide solution, bubbles were produced. State the physiological process that is similar to it in human that was being investigated
(1mk)

……..

3.(A)You are provided with photographs of specimens labeled P, Q, R and S which were obtained from the same animal. Examine them and answer the questions that follow.





(a) With a reason identify P and Q. (4mks)

P ……

Reason ……..

Q ……...

Reason ……..

(b) Using observable features only state.

(i) One similarity between specimen Q and R. (1mark)

……

……

(ii) One difference between specimen R and S. (1mark)

R	**S**

(iii) Explain how specimen S is adapted for its functions. (1mks)

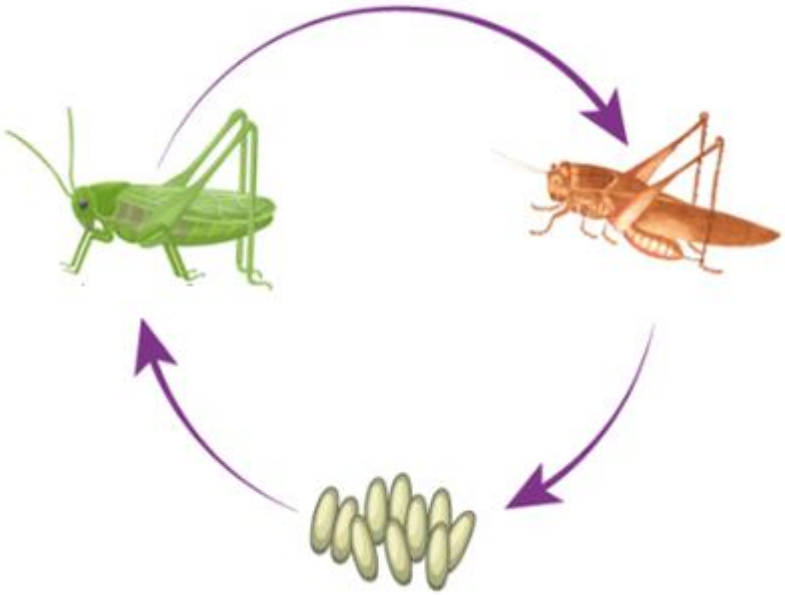
……
……

(c)In specimen P name the four parts labeled. (2mks)

A ……..

B ……..

(B) The diagram below shows a process that takes place in some insects.Study it and answer the questions that follow.



(i) Identify the life cycle above (1mk)

……

(ii) Name two hormones that control the process (2mks)

……

……..

(iii) Explain the importance of the process to organisms where it occurs? (2mks)

……

……

……

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Candidate's Signature……**Date**……

KENYA HIGH SCHOOL TRIALS

231/3

BIOLOGY (practical)

PAPER 3

INSTRUCTIONS TO THE CANDIDATES.

a) *Write your name and index number in the spaces provided above.*

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

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

d) *You are required to spend the first 15 minutes of the 1 ¾ hours allowed for the paper reading the whole paper carefully before commencing your work.*

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

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

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FOR EXAMINERS USE ONLY

Questions	**Total marks**	**Candidates score**
1	16	
2	13	
3	11	
Total score	40	

1. You are provided with solution labelled L, a piece of visking tubing, some string, four test tubes, a beaker a white tile and these reagents iodine solution and Benedict's solution.

(a) Using the appropriate reagents, carry out food tests to identify the food substances contained in L. Outline procedure used and record your observation and conclusions in the table below. (6 marks)

Food substance	Procedure	Observations	Conclusion

Securely tie one end of the visking tubing with the string and place solution L into it until it is about $\frac{3}{4}$ full. Ensure that it is not leaking and tie up the other end securely. Wash away all traces of solution L from the outside of the visking tubing. Place the visking tubing in the beaker and submerge in distilled water. Note the time and allow the set up to stand for at least 30 minutes. After 30 minutes take some of the water from the beaker and carry out similar food tests on it.

(b) Record your observation and conclusions in table below. (4mks)

Food substance	Procedure	Observations	Conclusion

(c) Account for the results obtained (a) and (b) (3 marks)

(d) What physiological process is demonstrated by this experiment? (1 mark)

(e) (i) Name **one** part of the body where a similar process takes place. (1 mark)

(ii) What is the process you have named in e(i) above called? (1 mark)

Q2. You are provided with photographs of specimens labeled K and L. examine them and answer the questions that follow.

(a) Identify each specimen and name the class of the organism from which they were obtained. (2mks)

Specimen	**Identity**	**Class**
K	_____	_____
L	_____	_____

(b) Label all the parts of specimen K, on the photograph. (3mks)

(c) State the functions of each of the parts you have labeled in (b) above. (3mks)

(d) State two ways in which the part labeled L is adapted to its functions. (2mks)

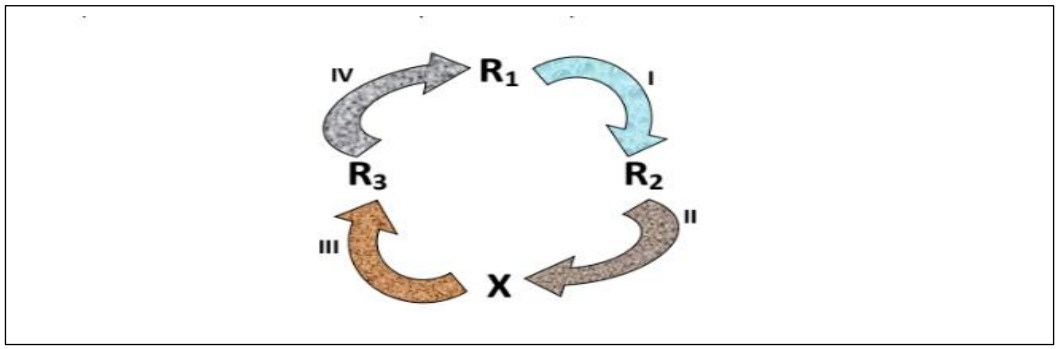
(e) State the functional relationship between

(i) Specimen K and L (1mk)

(ii) State two adaptations of the part labeled N to its function. (2mks)

Q3. You are provided with specimens labeled R1, R2 and R3 representing different stages of plant development. Study the specimens carefully and answer questions related to them.

a. The chart below shows relationship between the specimens



I) Identify process 1 (1mark)

II) state one internal and one external condition necessary for the process identified in (1) above

(2 marks)

III) Name the: (2 marks)
Stage of development R2

Process immediately before R3 in process (III)

b. Dissect specimen R3 logitudinally and open it out
I) Make a drawing section and labeled it (4 marks)

II) Explain two adaptations of the specimen to its function (2marks)

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Candidate's Signature……**Date**……

MANGU HIGH SCHOOL TRIALS

231/3

BIOLOGY (practical)

PAPER 3

INSTRUCTIONS TO THE CANDIDATES.

a) *Write your name and index number in the spaces provided above.*

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

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

d) *You are required to spend the first 15 minutes of the 1 ¾ hours allowed for the paper reading the whole paper carefully before commencing your work.*

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

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

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FOR EXAMINERS USE ONLY

Question	Maximum score	Candidate's score
1	**12**	
2	**14**	
3	**14**	
Total Score	***40***	

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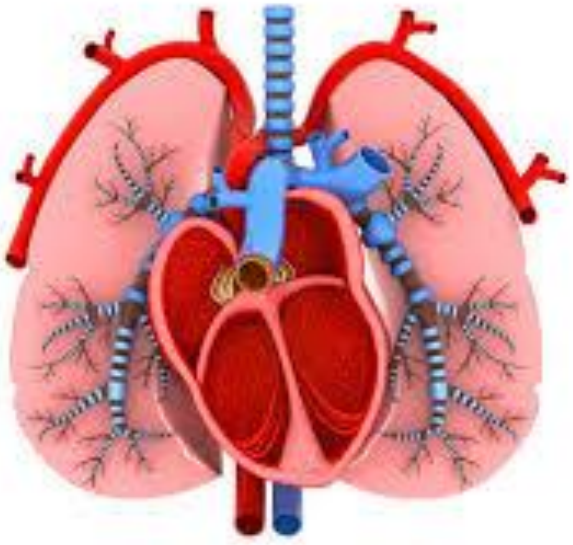
1. Study the photograph below and answer the questions that follow.



a) State two organ systems in which the two organs in the photograph above are found. (2mks)

b) Label on the photograph the following structures. (4mks)
   (i) Bronchi
   (ii) Left ventricle
   (iii) septum
   (iv) trachea

c) State one feature of the following structures identified in(b) above and give the importance of the features. (4mks)

structure	feature	Importance
Left ventricle		
Trachea		

d) Use an arrow to show the flow of carbon (iv) oxide molecule thorough the chambers of the heart towards the lungs. (1mk)

e) State one observable features of lungs in the photograph above that suits them to their function. (1mks)

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

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

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

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

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

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

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

(vii) What is the identity of solution **R?** **(1 mark)**

(viii) State **one** factor that can affect the process demonstrated in 2a **(v**) above **(1 mark)**

b) Use the reagents provided to test for the food substance in solution Q.

Food substance	procedure	observation	conclusion

(4mks)

3. The photograph below shows specimen L. You are also provided with other two specimens labeled **k** and **M**. Study them then answer questions that follow:
Photograph L.

a) Identify the specimens. (3mks)
K
L
M

b) State **two** adaptive characteristic features of the specimen **L**. **(2mks)**

c) State two observable differences between specimen L and M. **(2mks**

Bone L	Bone M

d) (i) Draw and label the anterior parts of specimen K. (3mks)

(ii)State ways by which specimen K is adapted to its functions. (2mks)

(iii) Name the bone that articulates with specimen K at the:

Proximal end (1mk)

Distal end (1mk)

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Candidate's Signature……**Date**……

MASENO SCHOOL TRIALS

INSTRUCTIONS TO CANDIDATES:

- ***a)*** *Write your **name** and **admission number** in the spaces provided.*
- ***b)*** *Sign and write **date** of examination in the spaces provided above*
- ***c)*** *Answer **all** the questions in this paper.*
- ***d)*** *You are required to spend the first 15 minutes of the 1¾ hours allowed for this paper reading the whole paper carefully.*
- ***e)*** *Candidates should check the question paper to ensure that all the papers are printed as indicated and no questions are missing.*

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QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
1	17	
2	11	
3	12	
TOTAL	**40**	

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1.You are provided with solution M, Dilute Hydrochloric acid ,DCPIP, Benedict's solution, 1% copper II Sulphate solution and 10% sodium hydroxide solution.

Add 2m1 of hydrochloric acid to solution M and Shake.
Filter the mixture using the filter paper and filter funnel into a boiling tube provided.
Wash the residue from the filter paper into a beaker.

Using the reagents provided carry out food tests on the residue and filtrate. (15 marks)

a) **Residue**

Food substance being tested for	**Procedure**	**Observation**	**Conclusion**
REDUCING SUGARS			
VITAMIN C			
PROTEINS			

b) **Filtrate**

Food substance being tested for	Procedure	Observation	Conclusion
REDUCING SUGARS			
VITAMIN C			
PROTEINS			

c) Account for the observation in (a) and (b) above. (2mks)

d) The physiological process demonstrated above occurs in all living things. Name two important processes in animals that depend on it. (2mks)

2. You are provided with specimen R and S

a) (i) Give a reason why both R and S are fruits. (1mk)

ii) Why is R also a seed? (1mk)

(iii) Tabulate any two differences between specimen R and S (2mks)

Specimen R	Specimen S

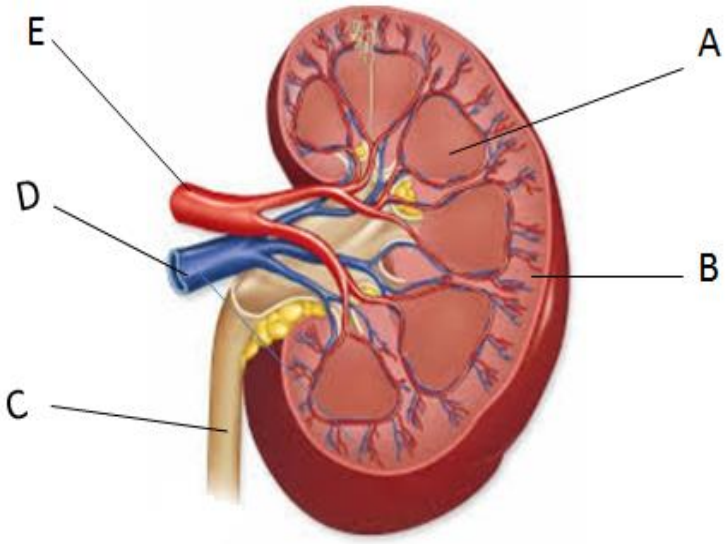
(b) Using a blade provide; carefully make transverse section of specimen S.

i) Make a labelled diagram of the cut section. Label any three parts. (4mks)

(ii) Name the type of placentation in S .Reason (2mks)

iii) What is the likely agent of dispersal of S? Reason (2mk

3. The photograph below is of mammalian organ



a) i. Name the basic functional units of the organ. (1mk)

ii) State any function of the organ above. (1mk)

b) Name the parts labelled- A

B

C (3mks)

c) How is the blood vessel E adapted its function. (2mks)

d) Give two differences between blood flowing through vessel E and D (2mks)

Blood in E	**Blood in D**

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Name …… **Admission number** ……

Candidate's Signature……**Date**……

MERU SCHOOL TRIALS

INSTRUCTIONS TO CANDIDATES:

- ***a)*** *Write your **name** and **admission number** in the spaces provided.*
- ***b)*** *Sign and write **date** of examination in the spaces provided above*
- ***c)*** *Answer **all** the questions in this paper.*
- ***d)*** *You are required to spend the first 15 minutes of the 1¾ hours allowed for this paper reading the whole paper carefully.*
- ***e)*** *This paper consists of **11** Printed pages.*
- ***f)*** *Candidates should check the question paper to ensure that all the papers are printed as indicated and no questions are missing.*

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QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
1	17	
2	11	
3	12	
TOTAL	**40**	

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

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

……

……

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

Food substance	**Procedure**	**Observation**	**Conclusion**

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

……

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

……

……

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

(i) State your observation. (1mark)

……

……...

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

Part of body……..……. (1mark)

Enzyme……...…… (1mark)

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

…….

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

(i) State your observations (1mark)

……

……

……

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

……

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

……

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

……..……

……..……

……..……..……

……..……

(v) Name **two** diseases of the circulatory system caused by excess cholesterol in food. (2marks)

……..……

……..……

(b) Study the photographs below depicting plants growing in different habitats. Use them to answer the questions that follow.

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

Y ……

Z……

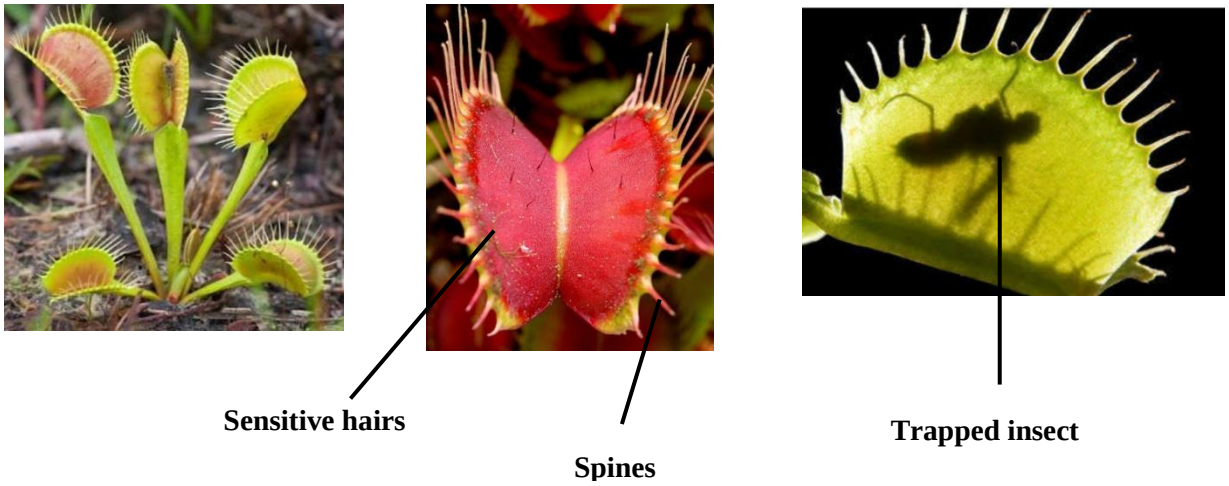
(ii) State the significance of the following structures found in the specimens shown above. (2marks)

R ……

S……..

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

A B C



(i) Name **<u>one</u>** major nutrient that is **deficient** in the soil where the above plant grows. (1mark)

……..……

(ii) Name the type of response shown by photograph **C** (1mark)

……..……

(iii) Describe how the above plant traps the insect (4marks)

……..……

……..……

……..……

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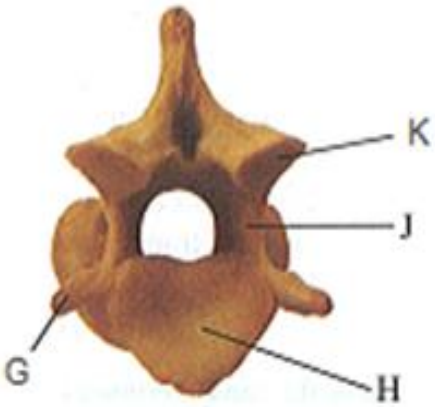
……..……

(b) The photographs below are of the same mammalian vertebra showing two views of the same bone. Examine them carefully.

View 1



View 2

(i) Identify the vertebra…….. (1mark)

(ii) Name the region from which the vertebra is obtained. (1mark)

……

(ii) Name the part marked X (1mark)

(iv) State the function of part X (1mark)

……

c) State the functional difference between a tendon and a ligament (1mark)

……

……

d) Name the bone that articulate with this vertebra at the distal end (1mark)

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NAIROBI SCHOOL TRIALS

231/3

BIOLOGY (practical)

PAPER 3

INSTRUCTIONS TO THE CANDIDATES.

a) *Write your name and index number in the spaces provided above.*

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

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

d) *You are required to spend the first 15 minutes of the 1 ¾ hours allowed for the paper reading the whole paper carefully before commencing your work.*

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

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

g) *Candidates should answer all the questions in English*

FOR EXAMINERS USE ONLY

SECTION	QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
	1	**10**	
	2	**18**	
	3	**12**	
TOTAL SCORE		**40**	

CONTACT US ON:

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EMAIL: Goldlitepublishers@gmail.com

1. You are provided with Irish potato tuber; dilute Hydrogen peroxide solution, washing up solution, solutions labelled K, PH 4, solution labelled L of PH 7, and solution labelled M of PH 9. You are also provided with 10mI measuring cylinder, white tile, glass rod, scalpel, stop watch, test tubes in a test tube rack.

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

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

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

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

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

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

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

.....

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.....

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

.....

.....

.....

.....

.....

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

Test	Procedure	Observation	Conclusion

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

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

.....

.....

.....

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

.....

.....

.....

.....

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

.....

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

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.....

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

.....

.....

.....

.....

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

.....

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.....

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

i) Identify the type of placentation (1mk)

.....

.....

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

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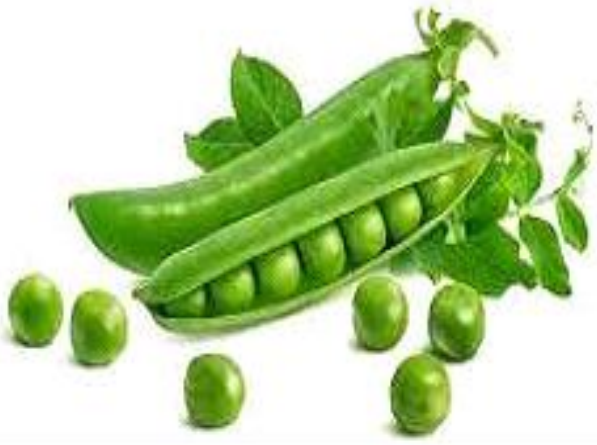
.....

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

PHOTOGRAPH N

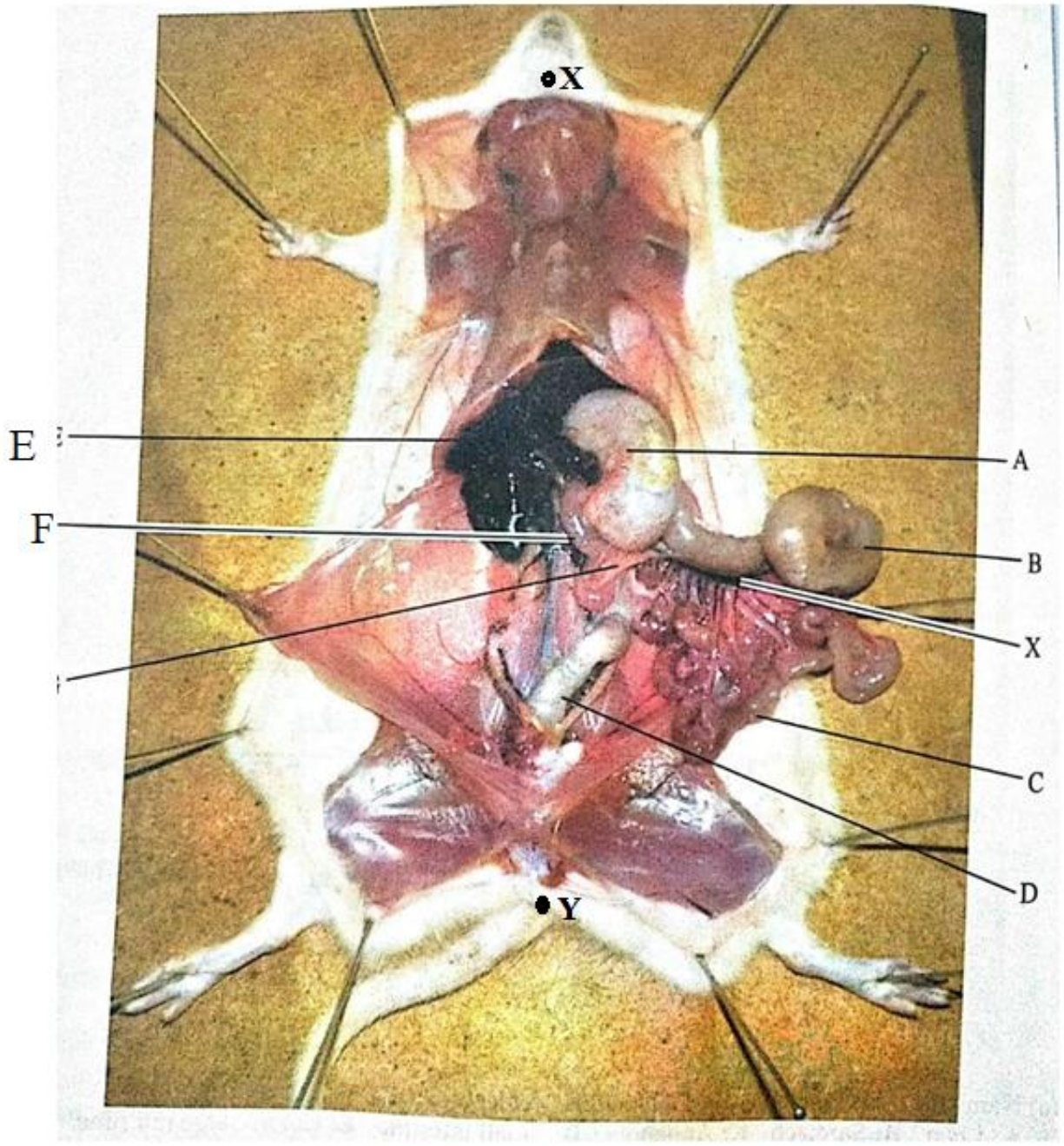


PHOTOGRAPH Q

SPECIMEN	MODE OF DISPERSAL	ADAPTIVE FEATURE

Q		
N		

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



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

b) Name the parts labelled (3mks)

i) B

.....

ii) C

.....

iii) F

.....

c) State

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

.....

.....

.....

ii) The function of D (1 mk)

.....

.....

.....

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

.....

.....

.....

.....

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