BIOLOGY PAPER 3 KCSE PAST PAPERS(2005-2016)

For marking schemes,call/Whatsapp Mdm Mariam-0746711892

'an investment of knowledge pays'

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Other available resources are;

- well summarised primary and secondary notes
- F1-F4 termly exams
- primary exams
- KCSE past papers
- KCPE past papers
- Mocks
- lesson plans
- schemes of work

Note:Exam questions are always free of charge

Marking scheme are not free

BIOLOGY

K.C.S.E PAPER 231/3 2005
QUESTIONS
PRACTICAL

1. You are provided with specimens labelled S_1 S_2, Q X and Y. The dichotomous key below can be used to identify the specimens.

1	a	Leaves simple	go to 2
	b	Leaves compound	Asteraceae
2	a	Leaves green	go to 3
	b	Leaves purple	Commelinacea e
3	a	Leaves parallel veined	Graminae
	b	Leaves net veined	go to 4
4	a	Leaf margin smooth	go to 5
	b	Leaf margin serrated	go to 6
5	a	Leaves hairy	Solanaceae
	b	Leaves not hairy	go to 8
6	a	Leaves succulent	go to 7
	b	Leaves not succulent	Malvaceae
7	a	Leaves with pointed tip	Crassulaceae
	b	Leaves with rounded tip	Crassulaceae
8	a	Leaves ovate	Nyactaginacea e
	b	Leaves lanceolate	Anacardiaceae

(a) Using the dichotomous key identify the specimens. In each case show the sequence

Of steps (e.g. lb, 2b, 3a, 6b etc.) in the key that you followed to arrive at the identify of each specimen. (10 mks)

Specimen	Steps followed	Identity
S_1	…….	
S_2	…….	

Q ……

X …….

Y …….

(b) (i) Using the flowers, name the classes of the spermatophyta to which specimens S, and Q belong.

(2 mks)

S_1 ……

Q …….

(ii) Give reasons for your answers in b(i) above. (2 mks)

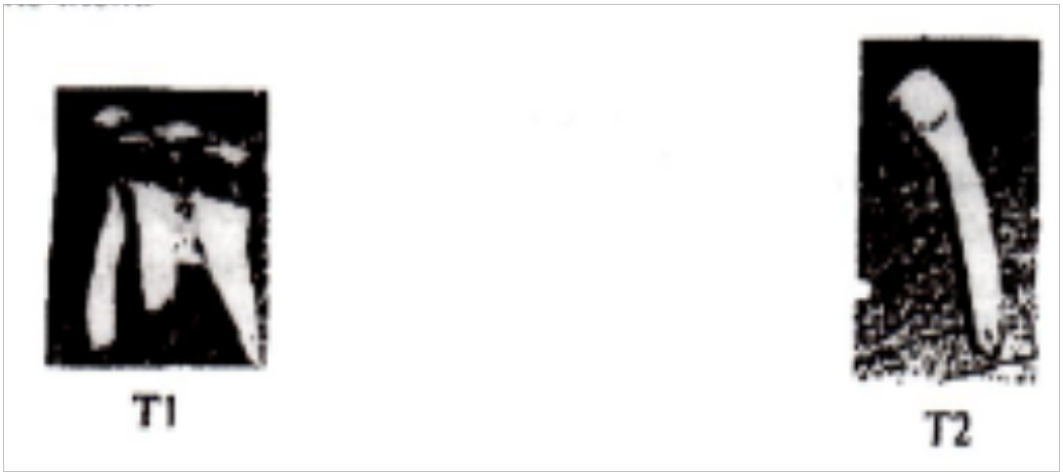
(c) State how specimen S_2 is adapted to its mode of pollination.

(2 mks)

(d) Open the flower of specimen S_2. Draw and label the pistil. (3 mks)

Magnification (Show your working) (1 mk)

2. Below are photographs labelled T_t and T_2 of specimens which were obtained from the same animal. Examine them.



a) With reasons identify T_1 and T_2. (5mks)

T_1……

Reasons

(i)

(ii)

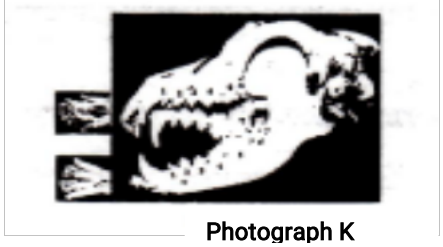
T_2……

Reason

b) In the photograph T, label four parts of the specimen. (4mks)

Examine photograph labelled J with an inset of the front part of lower jaw and paragraph K with insets of front parts and lower jaws.

Photograph J



Photograph K

c) Giving reasons, state the diet of the animals whose skulls are shown in the photographs.

J …….

Reasons

K ……

Reasons

d) Label the canine tooth in photograph J. (1 mk)

e) Write the dental formula of the animals whose skulls are shown in photographs

J and K.(The teeth that are not very distinct in the photographs are numbered). (2 mks)

f) Identify the photograph of the skull from which specimens labelled T_1 and T_2 could have been obtained. (1 mk)

g) In the appropriate diagram label the position where the pad would be found in a living animal. (1 mk)

3. You are provided with a specimen labelled P.

a) Examine the inner and outer leaves of the bulb.

i. Record the differences between them. (1 mk)

ii. Give reasons for the differences in (a) (i) above. (1 mk)

b) Separate the roots and aerial leaves from the bulb.
Crush the roots, aerial leaves and the bulb separately.
Into separate test tubes and label them. Using the reagents provided, test for the food substances in each of the extracts. Record the procedure, observations and conclusions in the table below. (9 mks)

Extract	Procedure	Observations	Conclusion
Roots			
Bulb			
Aerial Leaves			

c) Account for the results obtained in(b) above.

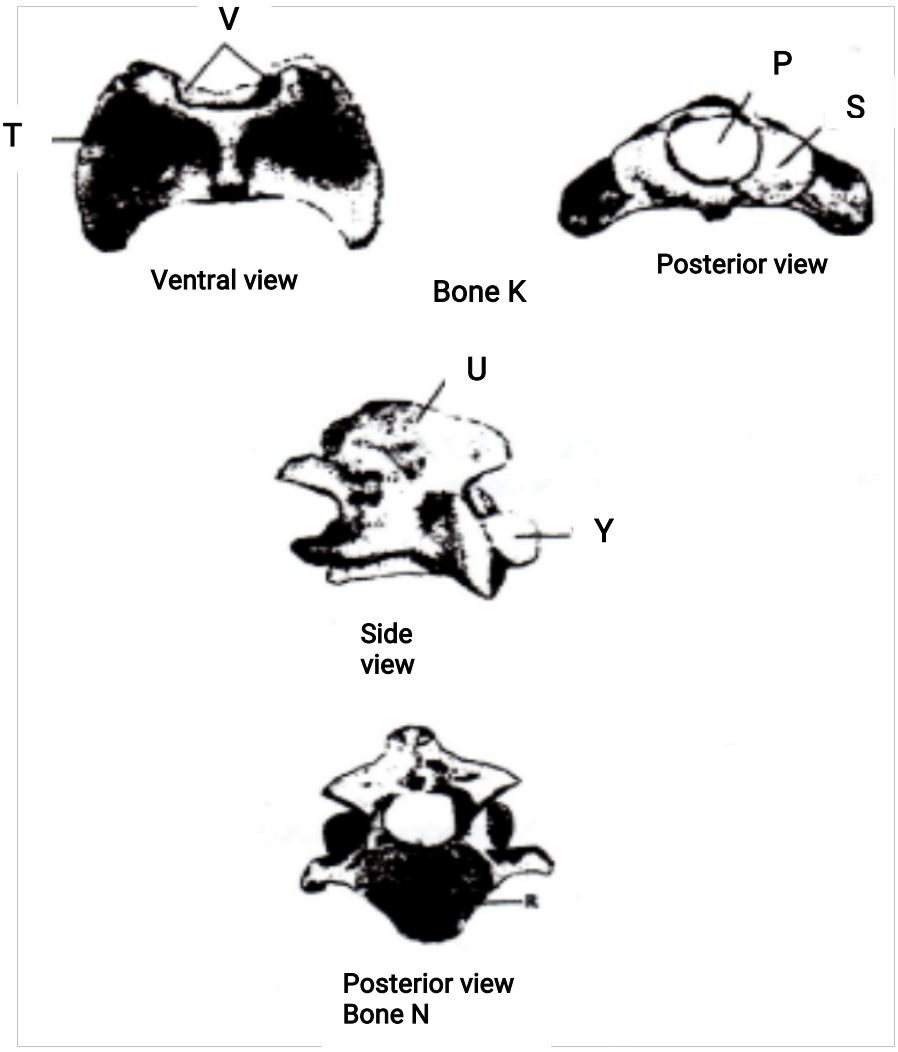
i) Roots (3 mks)

ii) Bulb (3 mks)

iii) Aerial leaves (3 mks)

BIOLOGY
K.C.S.E PAPER 231/3 2006
PRACTICAL
QUESTIONS

1. The photographs below are bones obtained from the same region of a mammalian body. Photograph labeled K are different views but same bone while M and N are views of different bones.



(a) Name the region from which the bones were obtained (1 mk)

(b) Identify the bones (3 mks)

K……..

M……

N……

(c) State three characteristics feature of the bone in photographs labeled K

(3 mks)

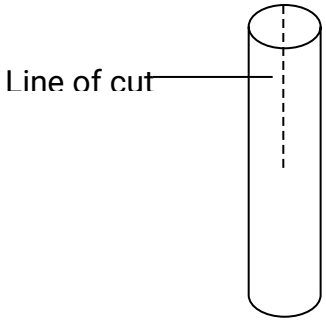
(d) Name the structure that fit in the opening labeled P in the photograph of bone K (2 mks)

(e) State the functions of the parts labeled S and T in photographs of bone K (2 mks)

(f) Name the structures that articulate with the parts labeled V in the photographs of bone K (1 mk)

(g) Name the parts labeled U and Y in the photograph of bone M and R in the photograph of bone N (3 mks)

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



Place one piece in the solution labeled L_1 and the other in solution labeled L_2 allow the set up to stand for 30 minutes.

(a) After 30 minutes remove the pieces and press each gently between the fingers

(i) Record your observations

L_1……. (1 mk)

L_2……. (1 mk)

(b) Examine the pieces

i) Record other observations beside those made in (a) (i) above (3 mks)

ii) Account for the observations in (a) (i) above (5 mks)

iii) Account for the observation in (b) (i) above (2 mks)

3. You are provided with three sets of seedlings labeled A, B and C. Examine them

(a) State the conditions under which each set was grown (3 mks)

(b) State four different between the seedlings in set A and B (4 mks)

(c) (i) Name the phenomenon exhibited by seedling in set B (1 mk)

(ii) Give a reason why plants exhibit the phenomenon named in (c) (i) above (1 mk)

(d) Name the response exhibited by the seedling in set C (1 mk)

(e) Explain how the response named in (d) above occurred (3 mks)

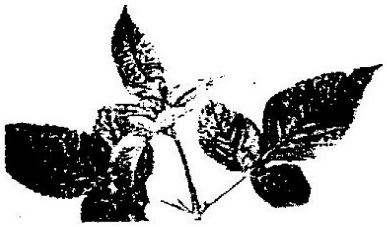
BIOLOGY

K.C.S.E PAPER 231/3 2007

PRACTICAL

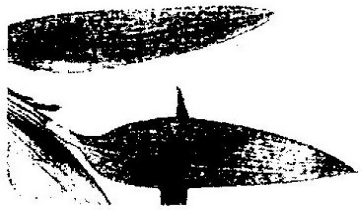
QUESTIONS

1. Below are photographs labeled P, Q, R, S, T, U and V of twigs obtained from plants examine them.

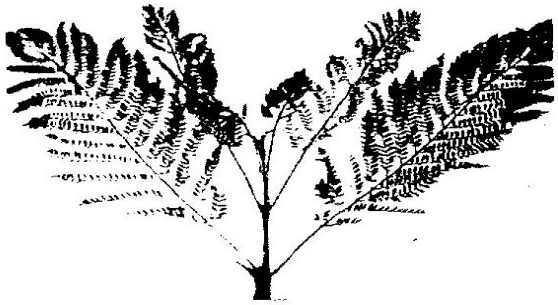


P

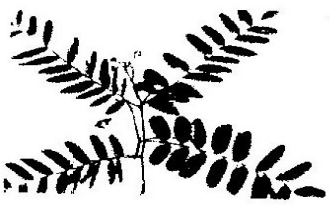
Q



R



S



T

U

For r

Using observable features in the photographs. Complete the dichotomous key given below

1	a Simple leaves	go to 2
	b Compound leaves	go to 5
2	a Leaves net veined	go to 3
	b leaves parallel- veined	commerlinaceae
3	a……..	go to 4
	b leaves with smooth margin	Nyctsginaceae
4	a Leaves alternate	Malvaceae
	b ……	Verbenaceae
5	a…….	go to 6
	b leaves bipinnate	Bignoniaceae
6	a leaflet with serrated margin	Compositae
	b leaflets with smooth margin	Papilioceae

(a) Use the completed dichotomous key to identify the family tow hich each plant Belongs In each case show the steps you followed to arrive at the identity. (12 mks)

Identity	Steps Followed
P	
Q	
R	
S	
T	
U	
V	

2. You are provided with solutions labeled P,Q,S and a filter paper. The solution labeled P will be used in parts (a), (b) and (c).
Solution **Q** is iodine solution.

(a) Use the iodine solution to test for the presence of food substance in solution P.
Food substance (1 mk)

Procedure (1 mk)

Observation (1 mk)

Conclusion (1 mk)

Solutions **S** is Benedict's solution

(b) Use the benedict's solution to test for the presence of the food substance is solution P.

Food substance (1mk)

Procedure (2 mks)

Observation (1mk)

Conclusion (1 mk)

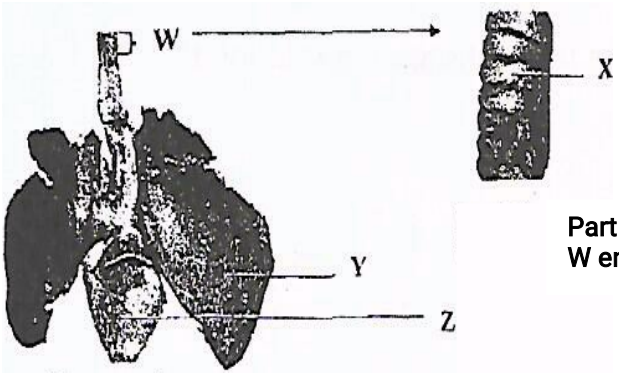
(c) Using the filter paper provided. Test for the presence of liquids in solutions P.

Procedure (2 mks)

Observation (1mk)

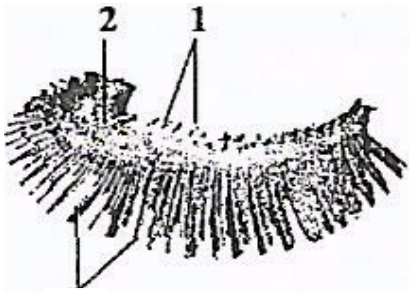
Conclusion (1 mk)

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



Part labeled W enlarged

Photograph J



3 Photograph K

(a) Identify the organs (2 mks)

J
K

(b) State the functions performed by the organs (1 mk)

(c) Name the parts labeled X. Y and Z in photographs (3 mks)

X
Y
Z

(d) (i) Identify the parts labeled 1, 2 and 3 in photographs K (3 mks)
1.
2.
3.

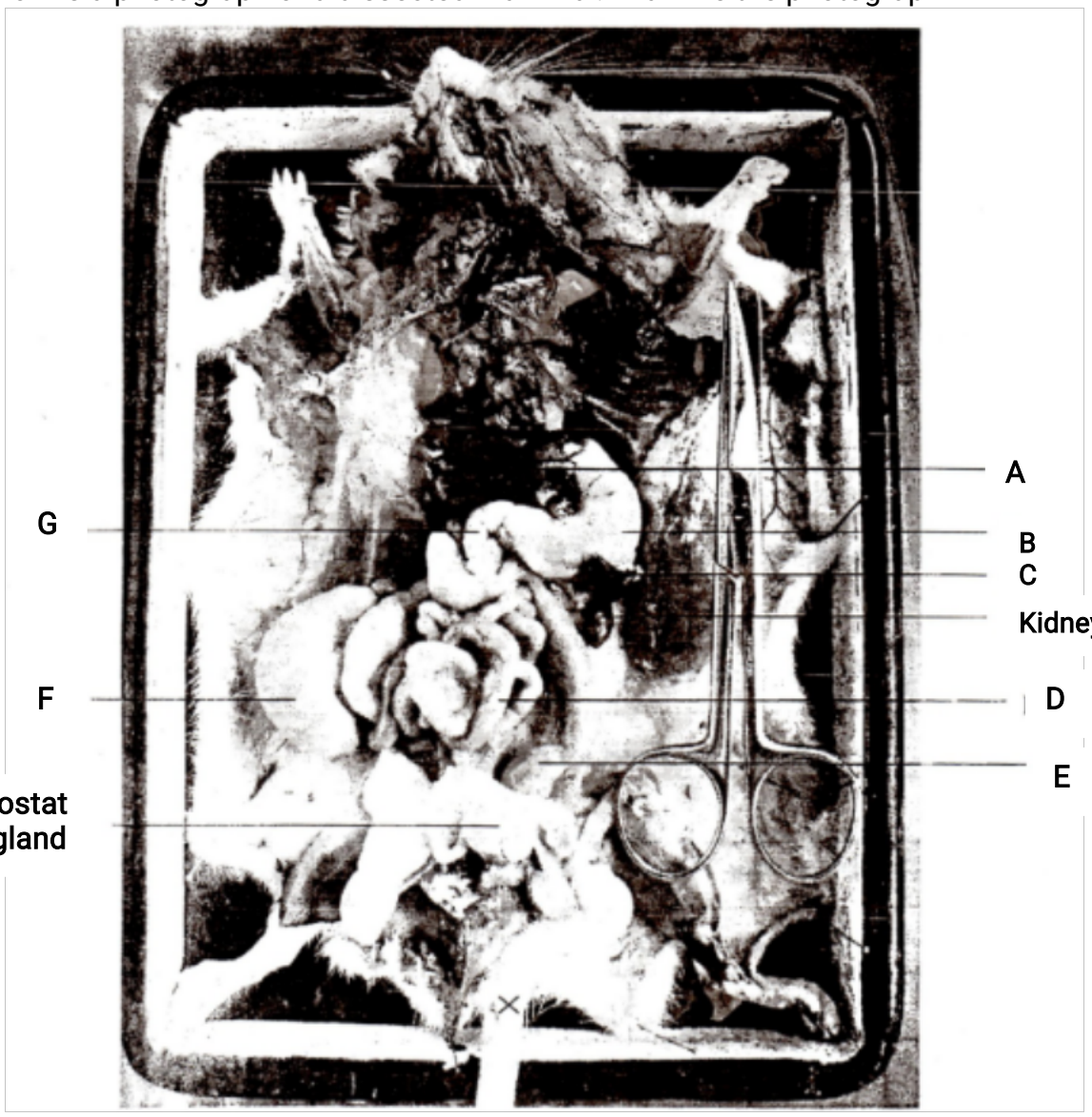
(ii) Using observable features. State how the parts labeled 1 and 3 you identified in (d)(i) above are adapted to their function (4 mk)
1
2.
3

BIOLOGY

K.C.S.E PAPER 231/3 2008

PRACTICAL QUESTIONS

1. Below is a photograph of a dissected mammal. Examine the photograph



(a) Name the parts labeled A, B, C D and G (5 mks)

(b) State the function of the structures labeled E and F (1 mk)

(c) In the photograph label the structure where vitamin K is produced (1 mk)

(d) (i) Name the sex of the mammal in the photograph (1

mk)

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

(e) (i) The actual length of the dissecting scissors in the photographs is 15 cm
Calculate the magnification of the photograph (2 mks)

(ii) Calculate the actual length of the mammal from the tip of the nose to point X on the tail (2 mks)

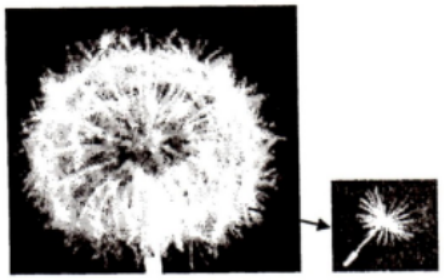
2. You are provided with substance labeled S,T,U X and Y. S, T and U are food substance. While X is 10% sodium hydroxide solution and Y is 1% copper sulphate solution. Carry out tests to determine the food substance (s) in S. T and U. (9 mks)

Substance	Food substance being tested for	Procedure	Observations	Conclusion
S				
T				
U				

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

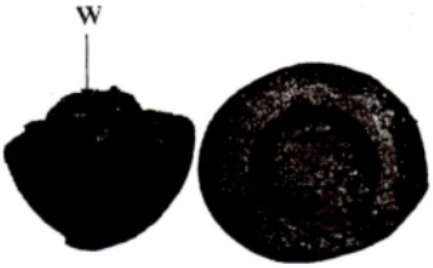
SPECIMEN K

SPECIMEN L



SPECIMEN M

SPECIMEN N



SPECIMEN P

SPECIMEN Q

In the table below name the mode of dispersal and the features that adapt the specimen
(s) to that mode of dispersal. (12 mks)

Specimen	Mode of dispersal	Adaptive features
K		
L		
M		
N		

P		
Q		

(a) (i) Label any two parts on specimen L (2 mks)

(ii) State the type of placentaion in specimen L (1 mk)

(b) Name the structure labeled W on specimen P (1 mk)

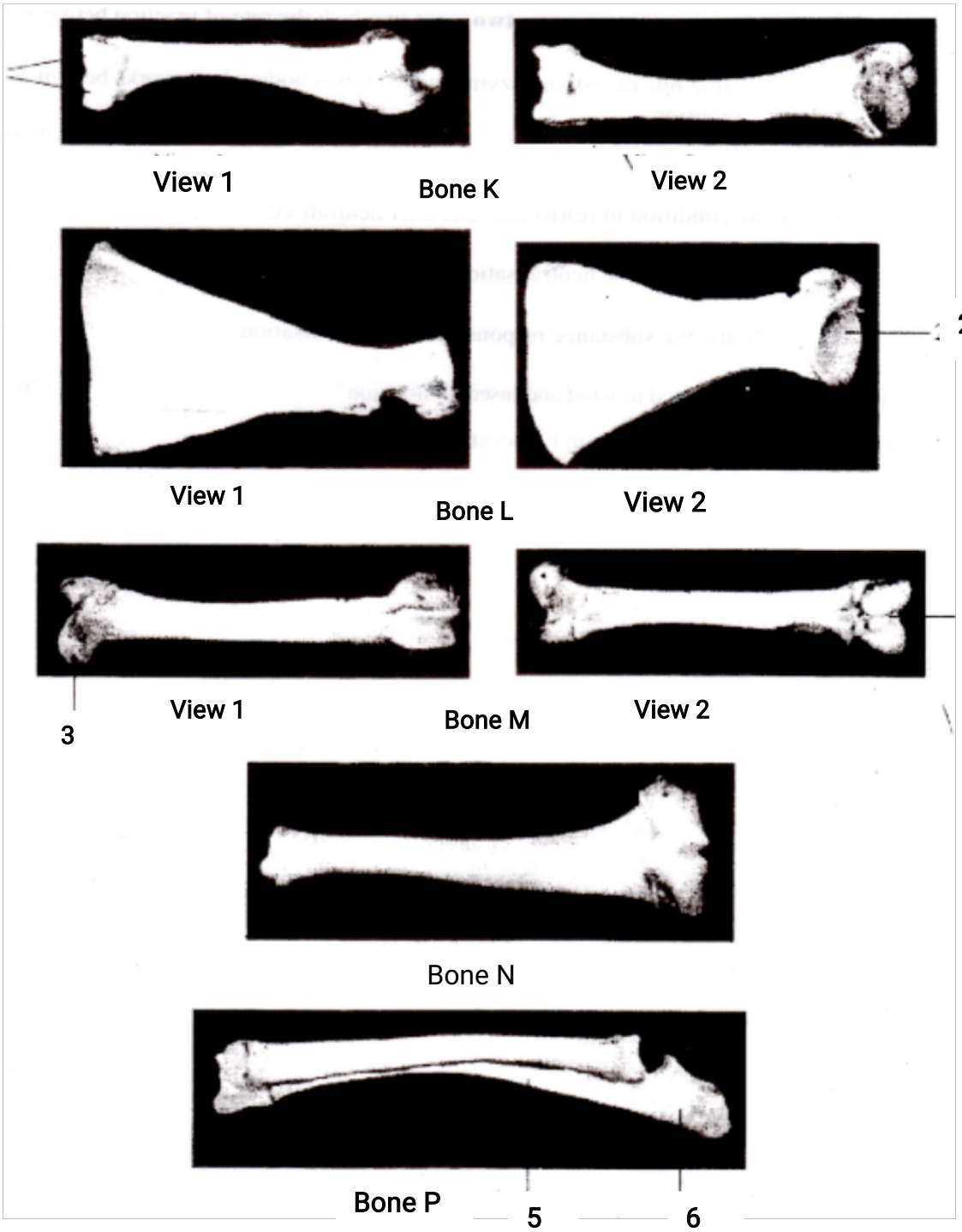
BIOLOGY

K.C.S.E PAPER 231/3 2009

PRACTICAL

QUESTIONS

1. The photographs labeled K L, M, N and P below are of bones obtained from a mammal for each of the bones K, L and M two views are shown



Identify the bones and name the part of the mammalian body from which each was obtained

Body	Identity of the bone	where found
K	……	……
L	……	……

M …… ……..

N …… ……..

P …… ……..

Name the parts labeled 1,2,3,4 and 5 (5 mks)

1. ……..
2. ……..
3. ……..
4. ……..
5. ……..

Name the bones that form a joint with bone K at its anterior and posterior and in each case name the type of joint they form (4 mks)

Asterior End

(i) Bone(s) ……

(ii) Type of joint ……...

Posterior end

(i) Bone (s) ……..

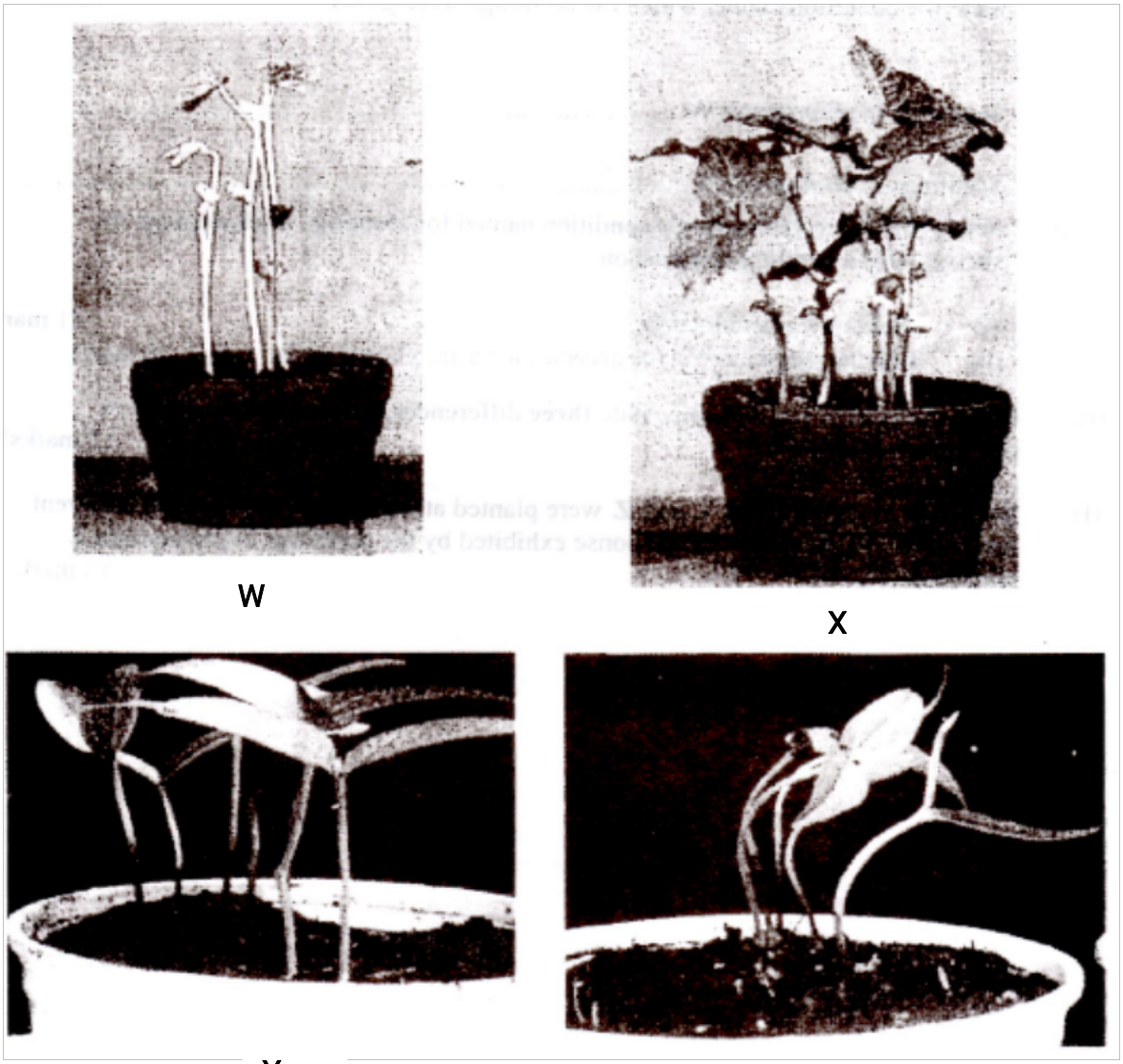
(ii) Type of joint ……..

State the function of the structure labeled 6 in bone P (1 mks)

2. You are provided with substances labeled P,Q,X,Y and Z. P and Q are food substances, while X is dilute hydrochloric acid, Y is dilute sodium hydrogen carbonate and Z is Benedict's solution. Carry outs tests to determine the food substance (s) in P and Q. (12 mks)

Substance	Food substances being tested for	Procedure	Observations	Conclusions
P				
Q				

3. The photographs labeled W, X, Y and Z show seedlings that were grown under different conditions. Examine them



W

X

Y

Z

a) Label any three part of the seedlings in photograph W (3 mks)

b) (i) name the type of generation exhibited by the seedlings (1 mk)

(ii) give areason for your answer in b(i) above (1 mk)

(c) Seedlings in photographs W and X were planted at the same time

State the conditions under which the seedlings were grown

(2mks)

Seedlings in photograph W ……

Seedlings in photograph X ……

(d) When plants grow in the condition named for seedlings in photograph W,

they exhibit a certain phenomenon

i) Name the phenomenon (1 mk)

ii) State the significance of the pheneomenon named in d(i) above (1 mk)

(e) Using observable features only state three differences between the seedling in photographs W and X (3 mks)

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

BIOLOGY

K.C.S.E PAPER 231/3 2010

QUESTIONS

PRACTICAL

1. You are provided with a visking tubing, a solution labelled L, Iodine solution labelled solution E, Benedict's solution labelled solution F and apiece of thread. Tie one end of the visking tubing tightly using the thread provided. With the help of a syringe, put 10 ml of the solution labelled L into the visking tubing. Tie the other end of the visking tubing tightly.

   Ensure that there is no leakage at both **ends of the visking tubing.**
   Wash the outside of the visking tubing with water. Place the visking tubing upright in a 100 ml beaker. Add distilled water into the beaker to reach the level of the liquid in the visking tubing. Allow the set up to stand for 30 minutes or more.

   (a) Using 2ml in a test-tube in each case, test for the food substance in the liquid outside the visking tubing using (6 mks)

TEST	Procedure	Observations	Conclusion
(i) Iodine solution (Solution E)			
(ii) Benedict's solution (Solution			

   (b) Using 2ml in a test-tube in each case, test for the food substance in the contents of the visking tubing using (2 mks)

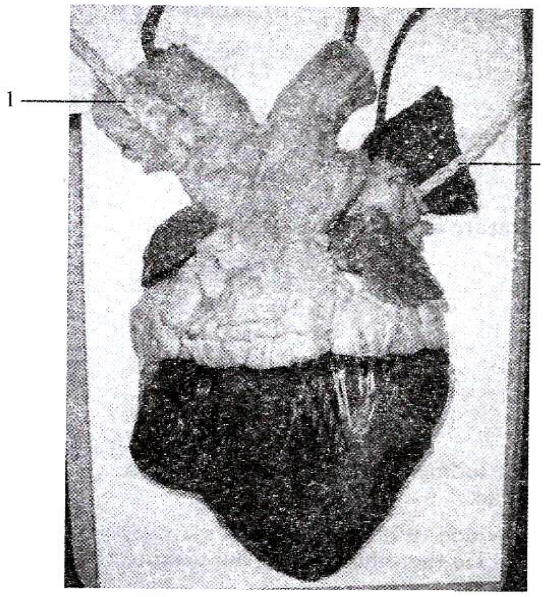
TEST	Procedure	Observations	Conclusion
(i) Iodine solution (Solution E)			
ii)Benedicts solution			

c) Account for your results in (a) and (b) above (3mks)

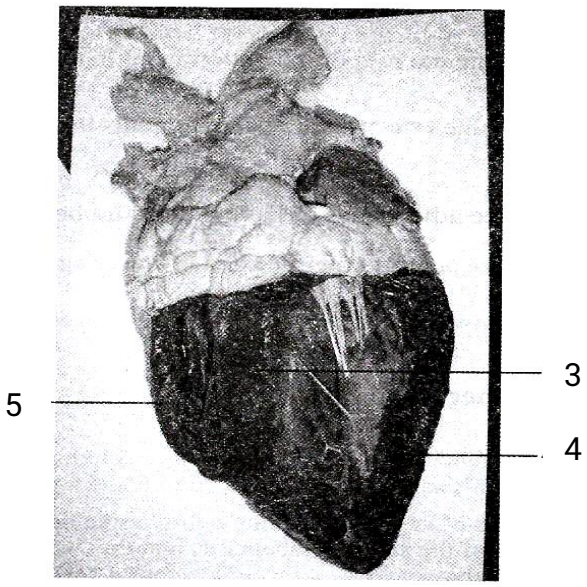
a

b

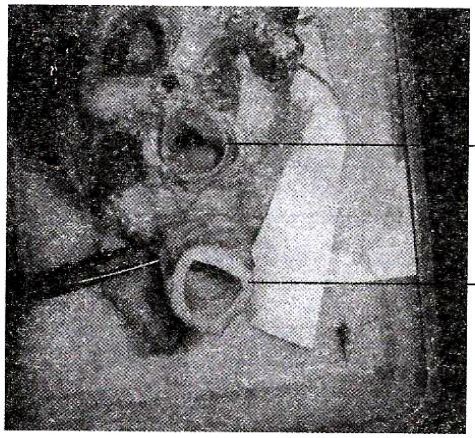
2. The photographs labeled J, K,M, and M2 are sections of a mammalian heart. Examine



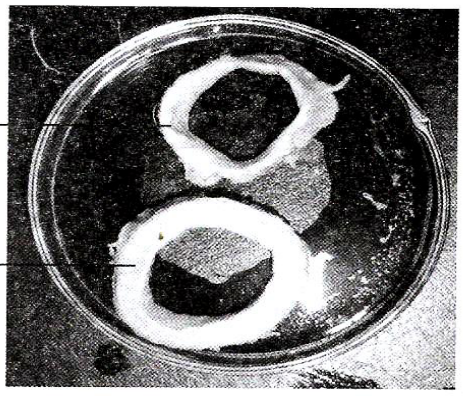
PHOTOGRAPH J



PHOTOGRAPH K



PHOTOGRAPH M_1



PHOTOGRAPH M_2

a) The blue, green and cream strings go through various blood vessels and end up at various chambers of the heart. For each string, name the chamber where the string ends and the blood vessel through which they string goes. (8 mks)

String	Chamber	Blood vessel
Blue	……	……
Green	……	……
Cream 1	……	……
Cream 2	……	……

b) Name the part labeled 3 in photograph K.
(1mk)

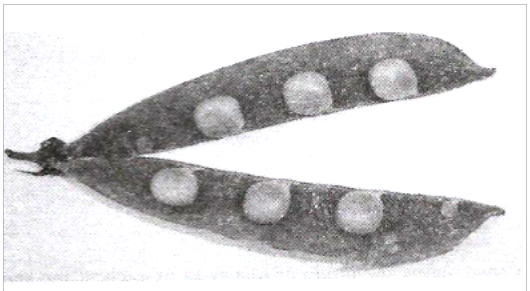
c) The parts labeled 4 and 5 are walls of two chambers of the heart. Account for the difference in the thickness of the walls
(1mk)

d) Photograph M, shows two blood vessels labeled X and Y while M_2 shows transverse sections of the same blood vessels with a reason, identify the type of each of the blood vessels
(4mks)

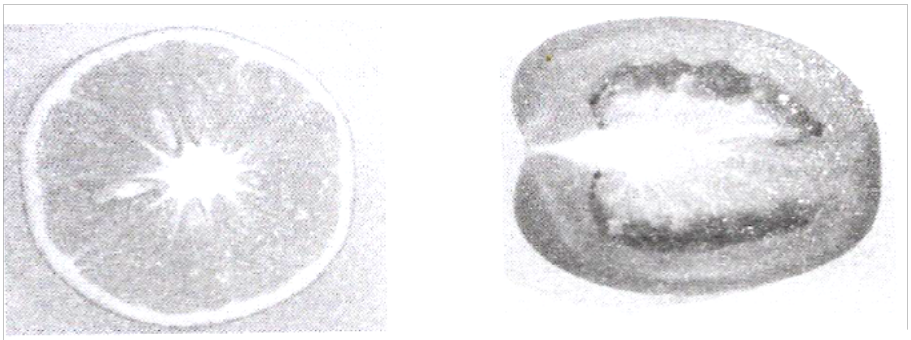
S
Reason
Y
Reason

e) In photograph K, indicate by letter B the part of the heart which would be cut to expose the bicuspid valve

3. The photographs labeled Q, R, S and T are sections of some parts of plants

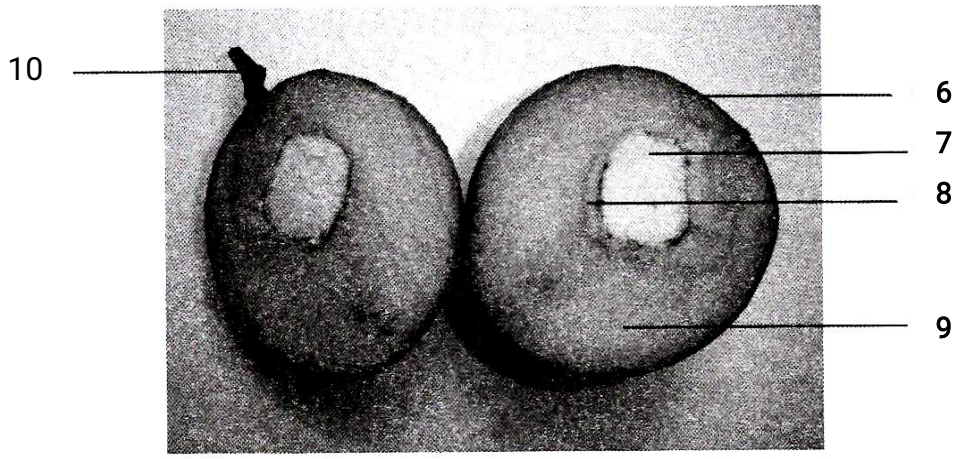


PHOTOGRAPH Q



PHOTOGRAPH R

PHOTOGRAPH S



PHOTOGRAPH T

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

Q.....

R.....

S .....

(b) Label a seed in photographs R and S. (2 mks)

(c) Name the parts labelled 6, 7, 8, 9 and 10 in photograph T. (5 mks)

6.....

7 .....

8.....

9 .....

10.....

(d) Giving a reason in each case, name the mode of dispersal of each of the specimens in photographs Q and T. (4 mks)

Q.....

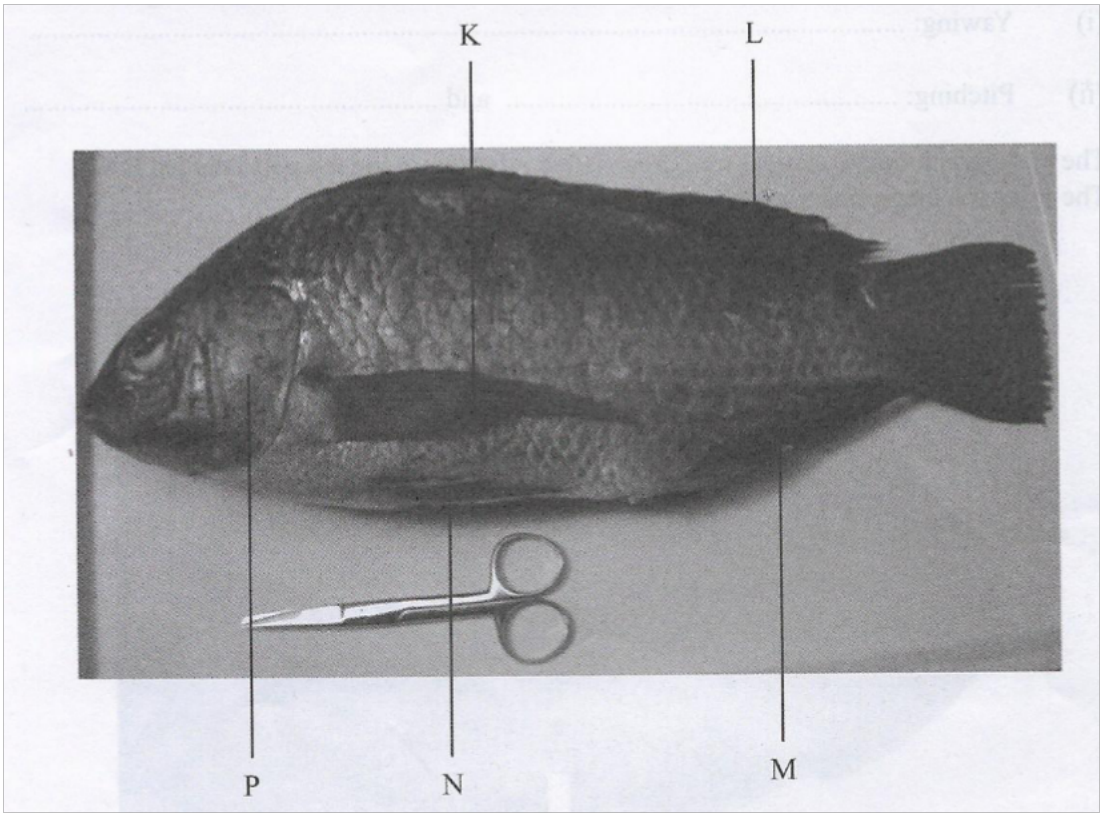
Reason .....

T .....

Reason .....

BIOLOGY
K.C.S.E PAPER 231/3 2011
PRACTICAL
QUESTIONS

1. Below is a photograph of a fish. Examine it and answer the questions that follow



a)Name the parts labeled K,L,M and N (4mks)

K

L

M

N

b)T he actual length of the pair of scissors next to the fish is 12.5cm. using this information, calculate the actual length of the fish

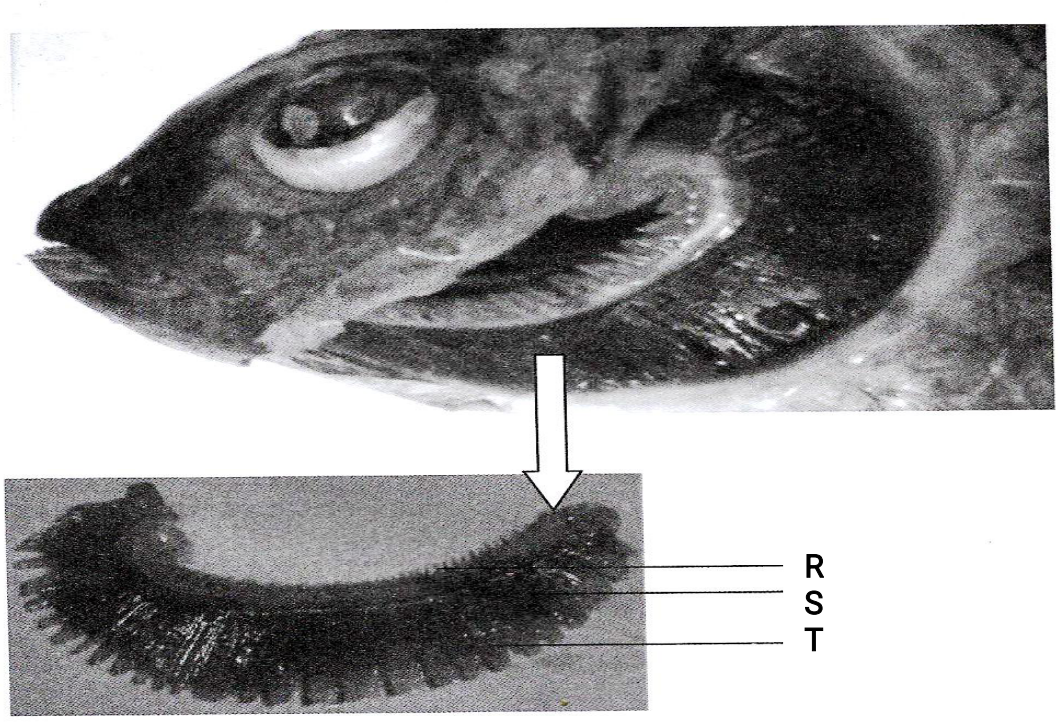
(3mks)

c) Name the fins that prevent the following movements of fish during swimming (3mks)

i) Yawing;

ii) Pitching

d) The photograph below shows structures visible after removing the part labeled P.
The insect is a magnified view of one of the structures.



i)Name the parts labeled R, S, and T (3mks)

R

S

T

ii)Explain how each of the parts named in (d) (i) above is adapted to its function (3mks)

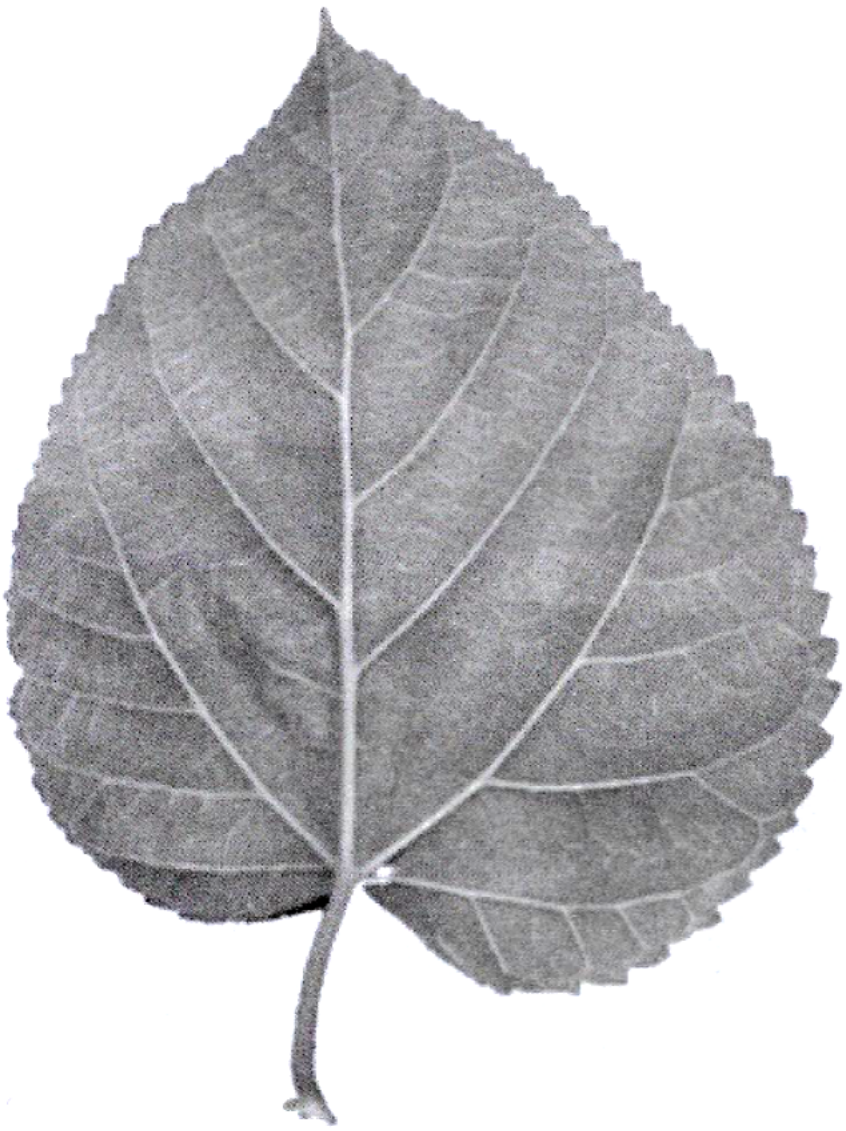
R

S

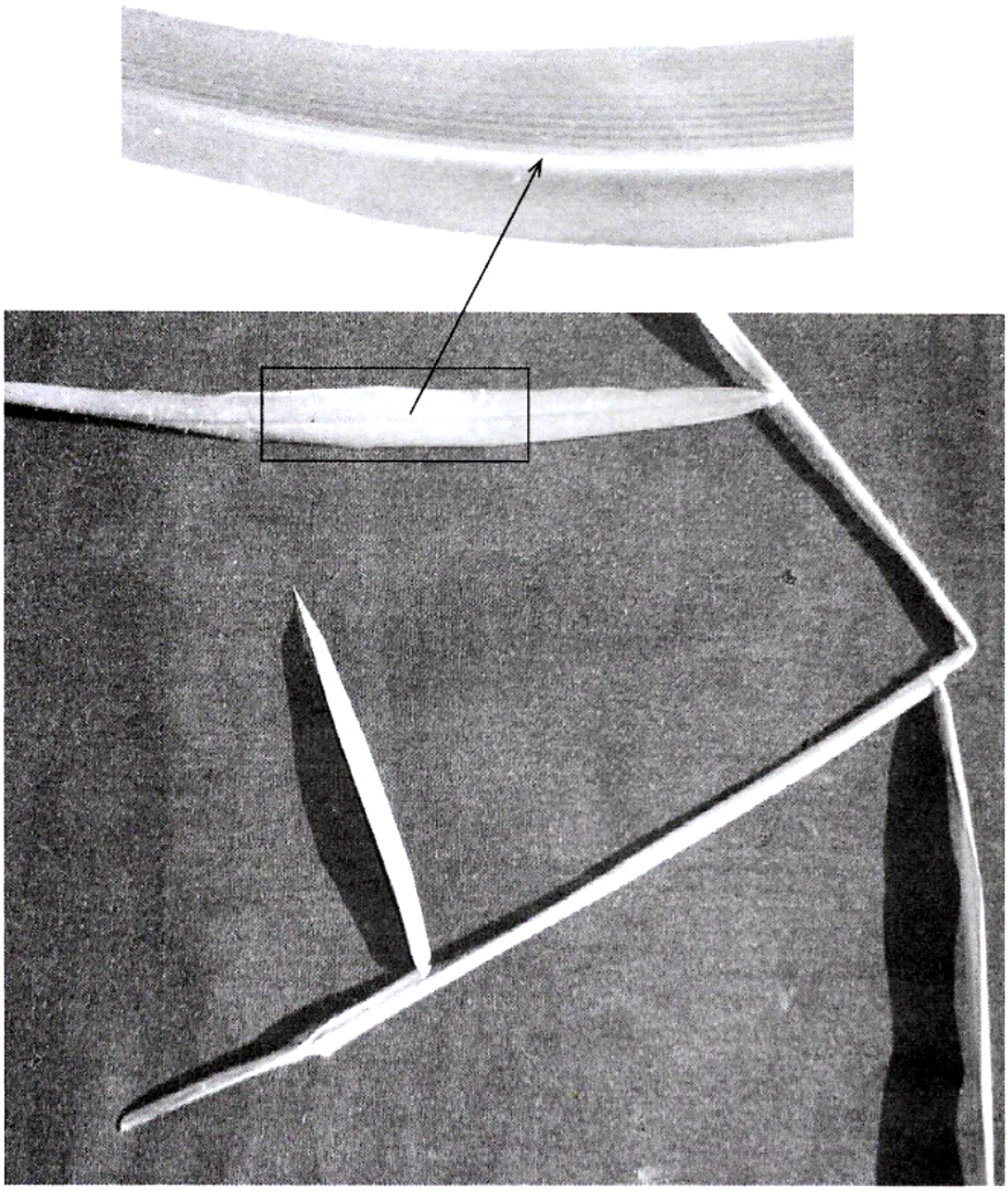
T

ii) Explain how each of the parts named in (d) (i) above is adapted to its function (3mks)

2. The photographs labeled D and E show two types of leaves.



PHOTOGRAPH D



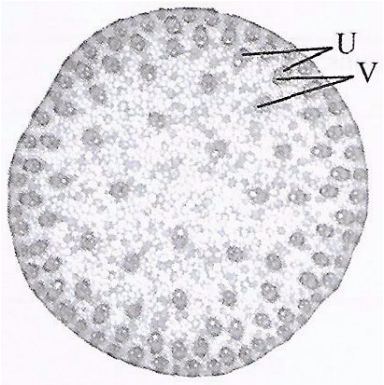
PHOTOGRAPH E

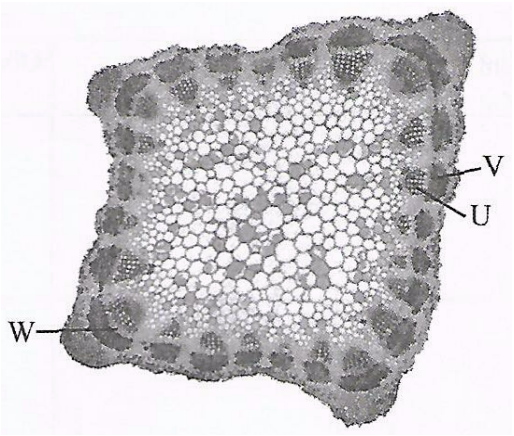
(a) With a reason, state the classes of plants from which the leaves in Photographs D and E were obtained. (4 mks)

Photograph D
Reason
Photograph E
Reason

(b) State three features in the leaf shown in photograph D that adapt it to its functions. (3 mks)

(c) The photographs below show the structures observed in cross sections of parts of two types of plants as seen under a light microscope.





PHOTOGRAPH F PHOTOGRPAH G

i)Name the parts labeled U,V and W (3mks)

U

V

W

ii) Identify five differences between cross sections F and G and record them in the table below

(5mks)

cross Section F	Cross Section G

3. You are provided with a sample of food labeled X in solution form, solution J (Iodine solution),, solution K (Benedicts solution) and solution L (Biuret's reagent). Carry out tests on the food sample to identify the type of food substances present

food being tested for	Procedure	Observations	Conclusion

BIOLOGY
K.C.S.E PAPER 231/3 2012
PRACTICAL
QUESTIONS

1. Below is a photograph showing a seedling during

(a) With a reason, name the type of germination shown in the photograph.

(i) Type of germination ..... (1 mk)

(ii) Reason .....2 mks)

(b) State three functions of the part labelled A in the germination of a seedling up to the appearance of the first foliage leaves. (3 mks)

(c) Account for the change in shape the seedling will undergo to straighten. (6 mks)

(a) You are provided with a specimen labelled D which has been grown on a substrate.

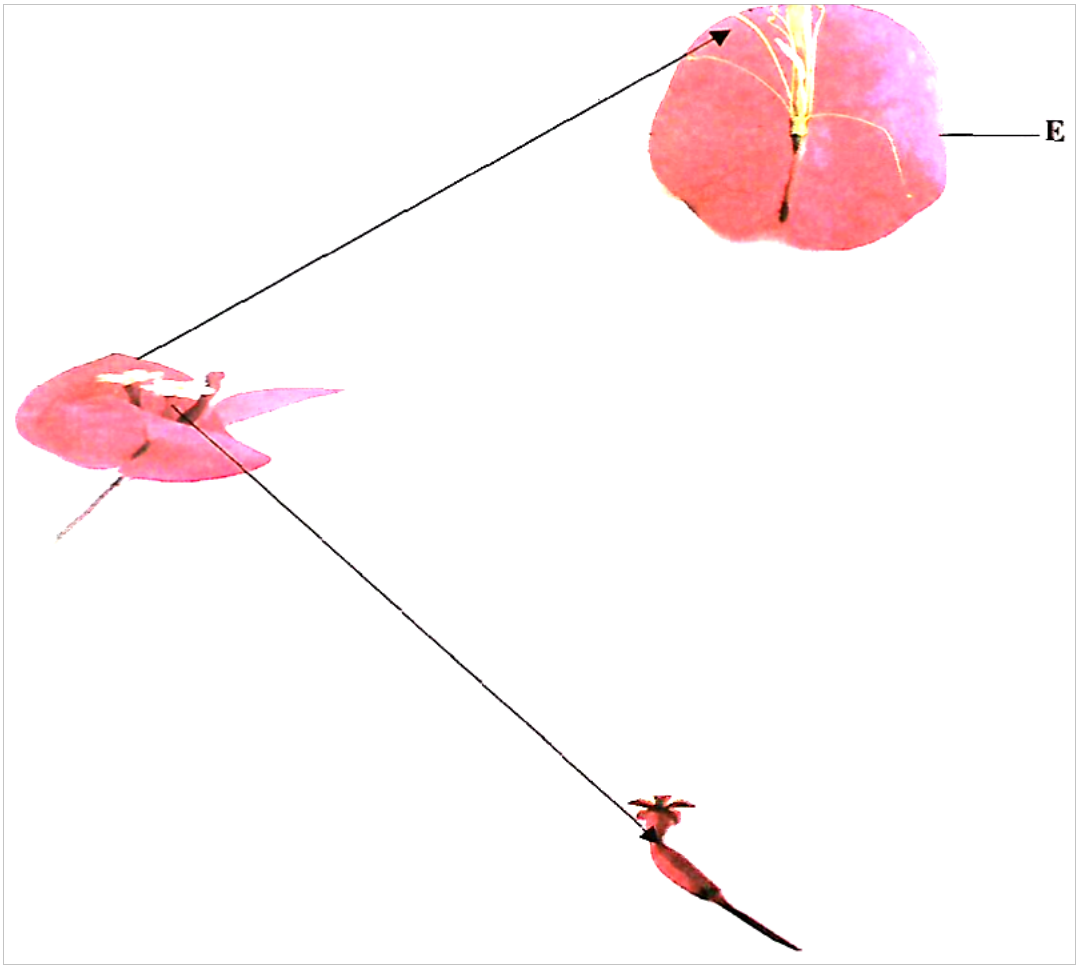
(i) Name the specimen (1 mk)

(ii) What type of asexual reproduction occurs in the specimen? (1 mk)

(iii) Using a mounting pin, pick a few strands of specimen D and place them on the white tile. Using a hand lens, observe the strands and make a labeled

drawing. (3 mks)

(b) The photograph below shows different parts of a flower.



(1 mk)

(i) Name the class of the plant from which the photograph was taken.

(ii) Using observable features on the photograph, give **three** reasons for your answer in (6) (i) above. (3 mks)

(iii) Name the agent of pollination for the flower in the photograph.

(iv) State three observations on the photograph that support the answer in *(b)* (iii) above. (3 mks)

(v) Name the part labelled E on the photograph.

You are provided with a potato, a 10 ml measuring cylinder, dilute hydrogen peroxide solution and substances F (pH 4), G (pH 7) and H (pH 9). Cut the potato and remove a piece measuring 1 cm^3 from it.

Cut the 1 cm^3 piece into tiny pieces and crush (macerate) them on a clean white tile Using a glass rod.

Divide the macerated potato into **three** equal portions for use in the procedure that follows:

I Put 2 cm^3 of substance F (pH4) into the 10 ml measuring cylinder.
Add **one** portion of the macerated potato into the measuring cylinder.
Read and record the volume of the mixture in the table provided below.
Add one drop of washing-up solution.
Add 1 cm^3 of dilute hydrogen peroxide solution to the mixture and immediately start a stop clock or watch. At the end **of two minutes,** read the mk to which the foam rises.
Record the reading in the table provided.
Clean and rinse the measuring cylinder with distilled water.

II. Put 2 cm^3 of substance G (pH 7) into the measuring cylinder.
Add the **second** portion of the macerated potato.
Read and record the volume of the mixture in the table.

III. Add one drop of washing-up solution.
Add 1 cm^3 of dilute hydrogen peroxide solution to the mixture and immediately start a stop clock or watch. At the end **of two minutes,** read the mk to which the foam rises.
Record the reading in the table.
Clean and rinse the measuring cylinder with distilled water.

Put 2 cm^3 of substance H (pH 9) into the measuring cylinder.
Add the **third** portion of the macerated potato.
Read and record the volume of the mixture in the table.
Add one drop of washing-up solution.
Add 1 cm^3 of dilute hydrogen peroxide solution to the mixture and immediately start a stop clock or watch. At the end of **two minutes,** read the mk to which the foam rises.
Record the reading in the table.

	F (pH 4)	G(pH7)	H (pH 9)
Volume of solution + portion of potato			•
Volume of solution + portion of potato + foam		i.	
Volume of foam			

(9 mks)

(a) Using the data obtained in the table, calculate the volume of the foam produced in each of the pH 4, pH 7, and pH 9 substances. Record the volumes in the table.

b)Account for

i)The observation made when hydrogen peroxide was added to the potato mixture

(3mks)

ii)The difference in the volume of foam produced in PH 4 and pH 9 substance

(2mks)

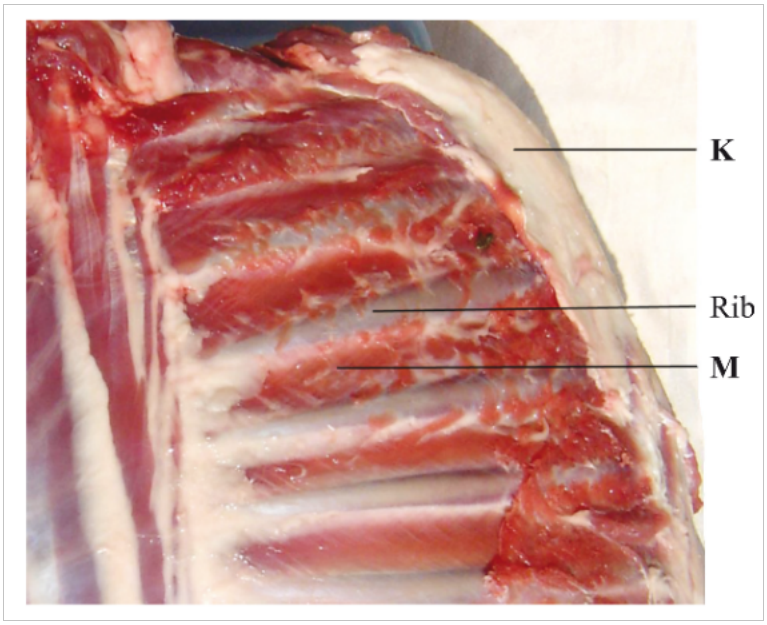
BIOLOGY

K.C.S.E PAPER 231/3 2013

PRACTICAL QUESTIONS

1.

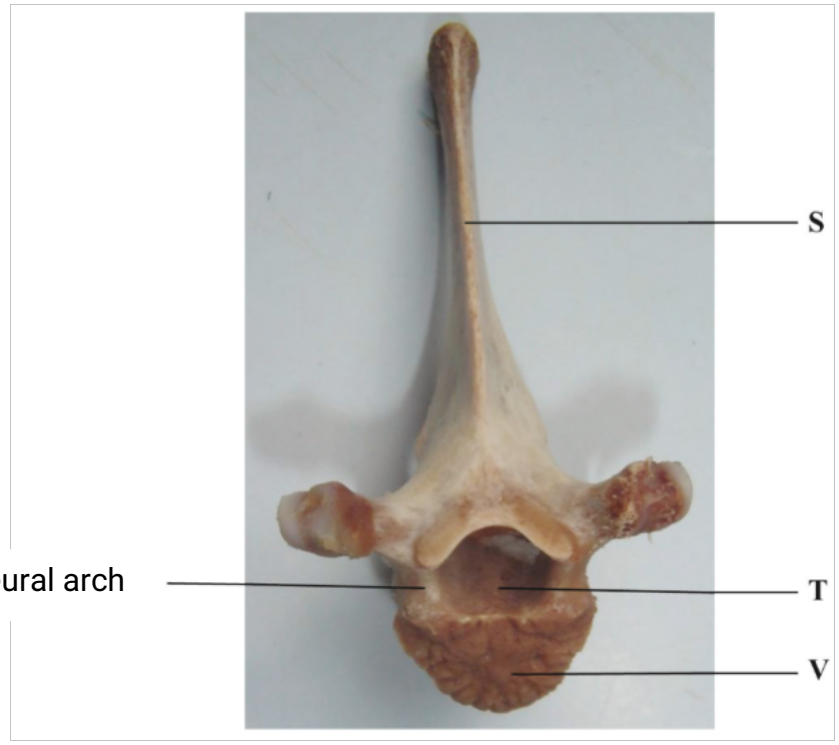
a) The photograph below shows the inner surface of the upper left side of the rib cage.



i. Name the bone covered by the fatty tissue labeled K. (1 mk)

ii. Explain the role of the part labeled M in inhalation. (5 mks)

b) The photograph below shows a mammalian vertebra



i. State the view of the vertebra presented. (1 mk)

ii. Name and state one function of the part labeled T.

Name ……. (1 mk)

Function…….. (1 mk)

iii. How are the labeled S and V adapted to their functions? (4 mks)

c) The actual width of the vertebra below in cm is shown by a section of the ruler

in the photograph.

i. Determine the width of the vertebra on the photograph. (1 mk)

ii. Calculate the magnification of this image. (2 mks)

iii. Determine the actual length of the vertebra from point A to B. show your working (2 mks)

2. You are provided with a food sample labeled solution C. using the reagents provided,

carry out tests to identify the food substances present in the sample.

TEST FOR	PROCEDURE	OBSERVATION	CONCLUSION
1. Reducing sugars			
2. Non-reducing sugars			
3. Proteins			

3. Below are photographs showing some observable features of leaves.

Compositae

Papilionaceae

commelinacae

Malvaceae

Nystaginace

Bignoniceae

Using the features in the order given below, construct a dichotomous key that can be used to identify the specimens.

- Simple or compound leaves;
- Leaf venation;
- Leaf margin;
- Arrangement of leaves on the stem;
- Pinnate or trifoliate nature of leaves. (10 mks)

BIOLOGY
K.C.S.E PAPER 231/3 2013
PRACTICAL
QUESTIONS

1a) You are provided with solutions labeled **Q** and **R**, a substance labeled **D** and a delivery tube fitted with a rubber bung/cork.

i) Label solution **Q** as **lime water**

ii) Label solution **R** as 10% sugar solution

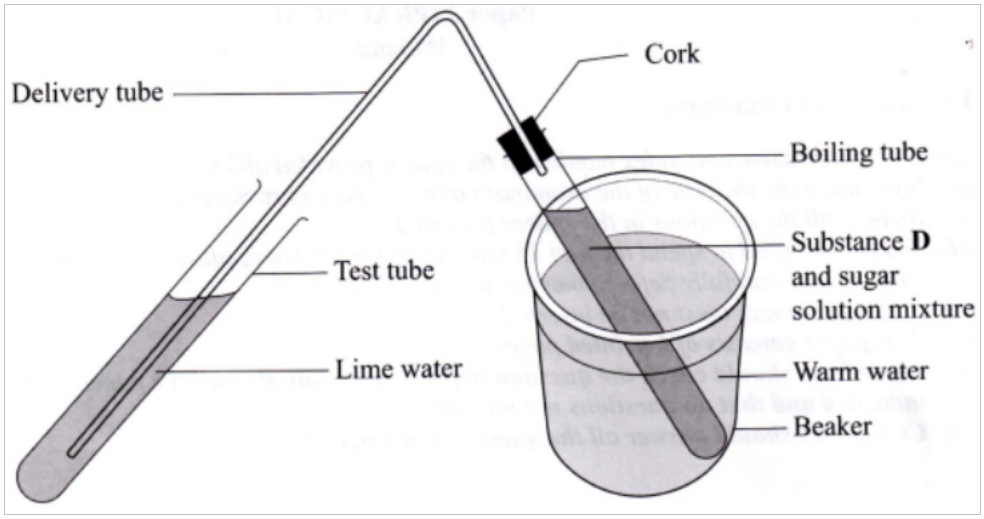
iii) Add substance **D** to the 10% sugar solution

iv) Tightly close/plug the boiling tube with the rubber bung/cork fitted with a delivery tube.

v) Dip the other end of the delivery tube in the test tube containing lime water.

vi) Put the boiling tube in the warm water bath at 40^0C and allow the set up stand as shown in the diagram below.

vii) Observe the set up for about 15 minutes



i) State the observations made in the lime water
(2 mks)

ii) Explain the observation made in the lime water. (2 mks)

iii) Name the physiological process that was being investigated.
(1 mk)

iv) Write a word equation for the physiological process investigated. (1 mk)

v) Why was warm water bath used in the experiment? (2 mks)

(b) Put a drop of the contents in the boiling tube on a microscope slide.Stain with a drop Of methylene blue and cover with a cover slip.
Observe it under a light microscope using low, medium and high power objective lenses.

(i) Draw and label one of the structures observed under the high power objective lens. (3 mks)

(ii) State the magnification of your drawing. (1 mk)
(iii) State the identity of substance **D.** (1 mk)

2 . You are provided with specimens labeled **E** and **F**

a) (i) Name the subvision to which the specimen belong. (1 mk)

(ii) Using observable features on the specimens, give **two** reasons for your answer in (a)(i) above. (2 mks)

b) State the difference between the

i) leaves of specimens **E** and **F** (5 mks)

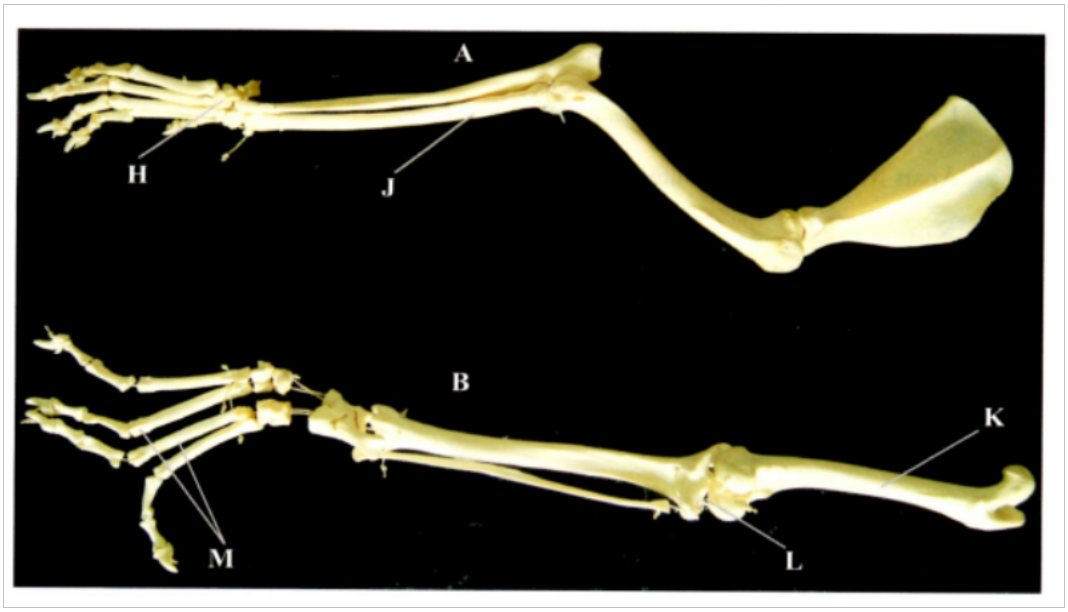
LEAF **E** LEAF **F**

ii) stems of specimens **E** and **F** (2 mks)

STEM **E** STEM **F**

(c) Using observable features on the specimen, state the adaptation of the stem of Specimen **E** to its habitat. (4 mks)

3. 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?
(1 mk)

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

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

J (1 mk)

K (1 mk)

M (1 mk)

(c) Which bone forms the second joint with the bone labeled **K?**
(1 mk)

(d) Name the type of joint formed at the part labelled **H** and **L.**

H (1 mk)

L (1 mk)

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

COMPONENT	FUNCTION

BIOLOGY

K.C.S.E PAPER 231/3 2015

QUESTIONS

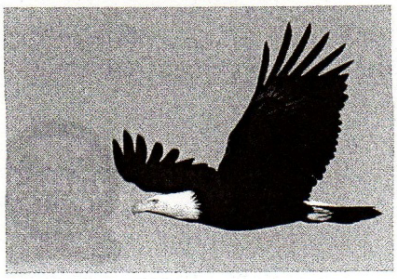
PRACTICAL

1. Using the pictures of animals provided below, complete the construction of the dichotomous key by filling the blank spaces

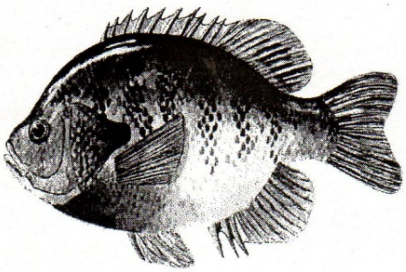
Eagle **Fish** **Earthworm**

Frog

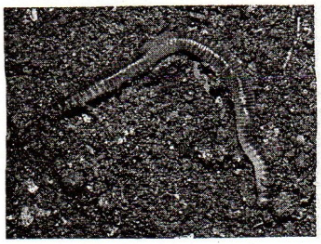
Spider



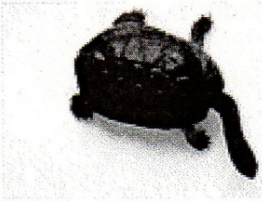
Eagle



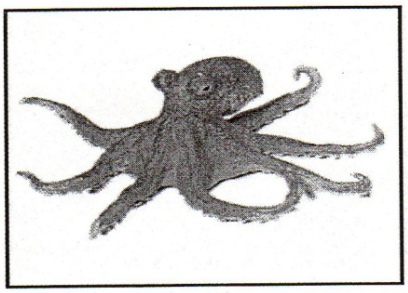
Fish



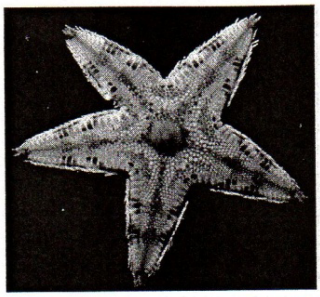
Earthworm



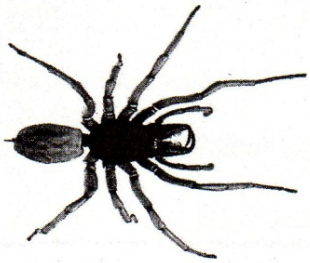
Tortoise



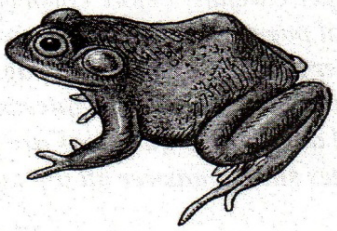
Octopus



Starfish



Spider



Frog

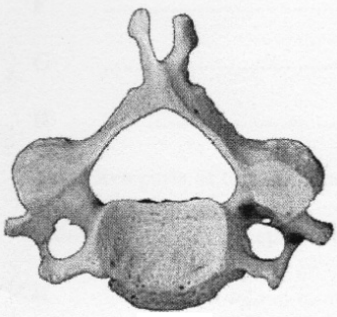
1.	(a)	Animals with a backbonr	Go to 2
	b)	Animals without a backbonr	____
2.	a)	Animals with wings	___
	b)	Animals without wings	___
3.	a)	Animals which live in water all the time	___
	b)	Animals which in water sometime	___
4.	a)	Animals with scales	____
	b)	Animals without scales	____
5.	a)	Animals with legs	___
	b)	Animals without legs	___
6.	a)	Animals with six legs	____
	b)	Animals with eight legs	____
7.	a)	Animals with a jelly-like	_____
	b)	Animals without a shell	_____
8.	a)	Animals with a jelly-like body	_____

b) Animals without a jelly-like body ____

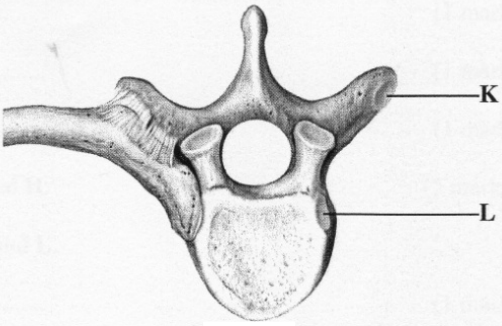
9. a) Animals with a segmented body ____

b) Animals without a segmented body _____

2. Below are pictures of three mammalian vertebrae



F



G

H

(a) Idetify the type of vertebra labeled.

F (1 mk)

G (1mk)

H (1mk)

(b) Label five parts of the vertebra labeled H. (5 mks)

(c) Name the articular facets labeled K and L.

K (1mk)

L (1mk)

(d) How does each of the parts of a vertebra enable a mammalian skeleton to cary out its functions? (4mk)

3. You are provided with a 250ml beaker, four test tubes solutions labeled D and E, iodine and Benedict's solutions
   Half fill the beaker with the hot water provided to create a hot water bath

(I) Label the four test tubes as follows;
   i. Test tube 1, D+Iodine
   ii. Test tube 2, D+E+Iodine
   iii. Test tube 3, D+Benedict's solution
   iv. Test tube 4, D+E+Benedict's solution

(II) Put 1 cm^3 of solution D in each of the four test tubes

(III) To the D+Iodine test tube, add one drop of iodine solution and shake to mix

(IV) To the D+E+Iodine test tube, add 1cm3 of solution E and two drops of iodine solution. Shake to mix

(V) To the D+Benedict's solution test tube, add 1cm3 of Benedict's solution and shake to mix

(VI) To the D+E+Benedict's test tube, add 1cm3 of solution E an 1cm3 of Benedict's solution. Shake to mix

(VII) Observe the changes in each of the four test tubes.

(VIII) Put all the four test tubes in the hot water bath and observe carefully for about five minutes.

a) Record the observations and conclusion for each of the four test tubes in the table below (8 mks)

NO	TEST TUBE	OBSERVATION	CONCLUSION
1	D+Iodine		
2	D+E+Iodine		
3	D+Benedict's solution		
4	D+E+Benedict's solution		

b) What was the role of each of the following in the experiment?

(i) Solution E

(1mk)

(ii) Hot water bath (1mk)

c) Give the identity of E in human beings (1 mk)

d) Explain the observations made on the reagents tested with Benedict's solution

(2mks)

BIOLOGY
K.C.S.E PAPER 231/3 2016
QUESTIONS
PRACTICAL

1. You are provided with specimen G.

(a) (i) Cut off the petiole, about 1.5 cm from the end where the leaf attaches to the stem.

(ii) Carefully make several thin cross sections through the piece obtained in (a)(i) above, using a sharp razor biade or scalpel.

(iii) Put the sections obtained in water on a Petri dish.

(iv) Mount the thinnest section(s) on a glass slide, add a drop of iodine solution provided.

(v) Observe the section(s) using a hand lens, then draw a labelled diagram of the section observed. (3 mks)

(b) Account for the following features of specimen G.

(i) Extensive network of veins (1 mk)

(ii) Tough leaf blade (1 mk)

(iii) Strong and extended petiole (1 mk)

(c) State with reasons, the class of plants from which the specimen was obtained

Class (1 mk)

Reasons: (3 mks)

(d) Explain why the following procedures were necessary during the preparation of the sections for observation.

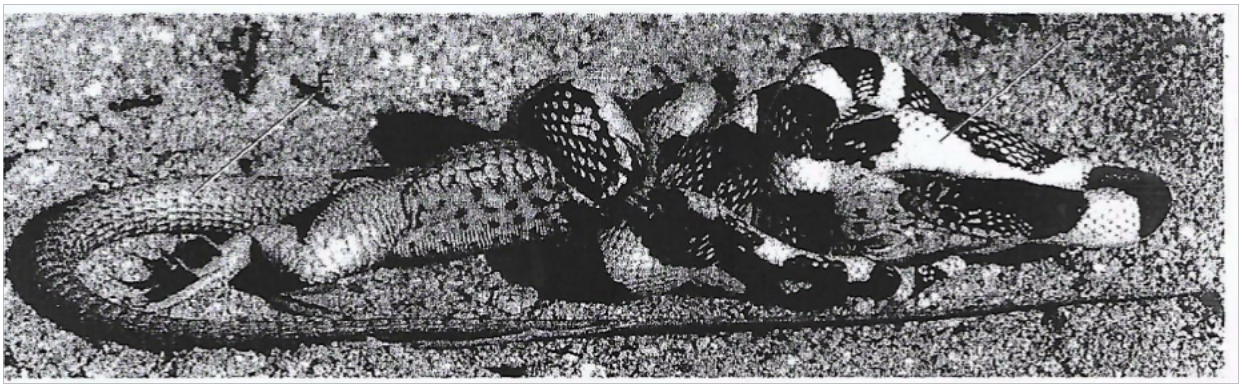
i) Putting the sections in water on petri dish (1 mk)

ii)Using a sharp scapel/ razor blade (1 mk)

iii)Adding iodine solution to the section (1 mk)

iv) Cutting very thin sections (1 mk)

2. Study the photograph below of some animals in a certain ecosystem and answer the questions that follow.



(a) State the type of biotic relationship exhibited by the animals shown in the photograph (1 mk)

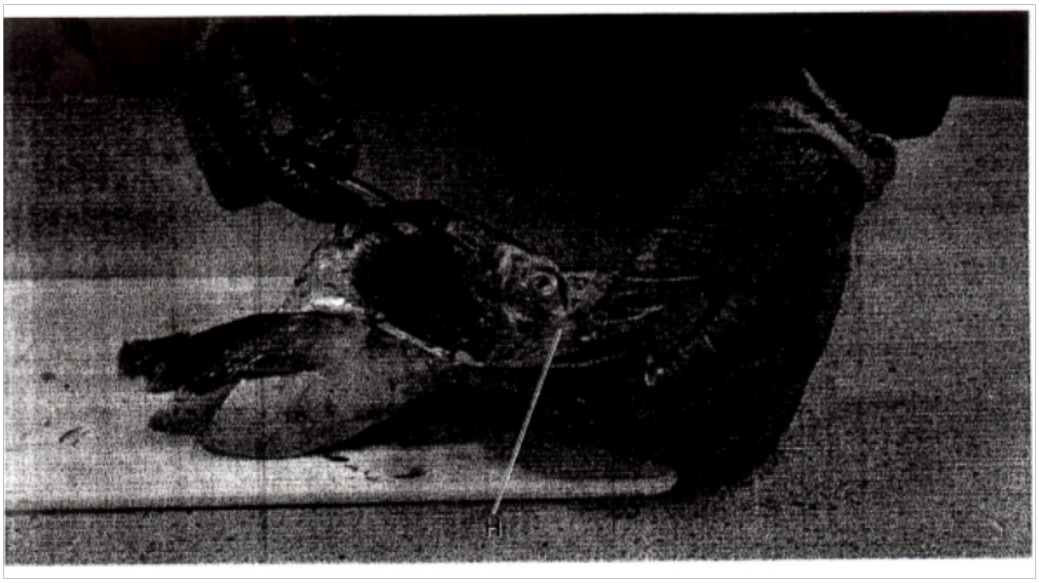
(b) (i) Identity which of the two animals, E and F, will have the least biomas? (1 mk)

ii)Give a reason for your answer in b(i) above (2 mks)

c) Explain the concept of "Survival for the fittest" in relation to the organisms illustrated in the photograph (3 mks)

d) Explain three visible survival adaptive features for the organisms illustrated in the photograph (6 mk)

3. The photograph below illustrates a procedure carried out to study gaseous exchange structures in a certain organism.



a) Identify two dissecting tools being used in the procedure illustrated (2 mks)

b i)Name the class of the animal in use. (1 mk)

ii)State any two visible characteristics from the photograph to support your answer in (b) (i) above (2 mks)

c) Name the part of the organism labeled H and state its function

Name (1mk)

Function:

(1mk)

d) i)Draw the gaseous exchange structure under study and on it, label the site for gaseous exchange (3 mks)

ii) How is the part labeled in (d) (i) adapted to efficient gaseous exchange? (3 mks)

'an investment of knowledge pays

The following KASNEB notes are available;

- ATD
- CPA
- CS
- CIFA

Call Mdm.Mariam;0746711892 to acquire them