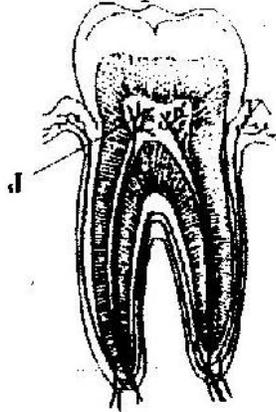


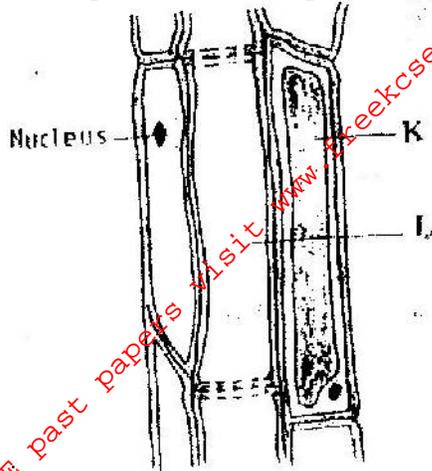
K.C.S.E 2007 BIOLOGY PAPER 1
QUESTIONS

1. (a) What is meant by the term binomial nomenclature (1 mark)
(b) Give two reasons why classification is important (2 marks)
2. (a) What is the formula for calculating linear magnification of a specimen when using a hand lens? (1 mark)
(b) Give a reason why staining is necessary when preparing specimens for observation under the microscope (1 mark)
3. Plant cells do not burst when immersed in distilled water. Explain (2 marks)
4. State three functions of Golgi apparatus (3 marks)
5. Distinguish between diffusion and osmosis (2 marks)
6. Describe what happens during the light stage of photosynthesis (3 marks)
7. The diagram below represents a section through a human tooth



- (a) (i) Name the type of tooth shown (1 mark)
(ii) Give a reason for your answer in (a) (i) above (1 mark)
- (b) State the functions of the structures found in part labeled J (2 marks)
8. (a) Name a fat soluble vitamin manufactured by the human body (1 mark)
(b) State two functions of potassium in the human body (2 marks)
9. State two ways in which the root hairs are adapted to their function (2 marks)

10. The diagram below represents a plant tissue



(a) Name the tissue (1 mark)

(b) Name the cells labeled K and L. (2 marks)

K.....
L.....

(c) What is the function of the companion cell? (1 mark)

11. (a) What prevents blood in veins from flowing backwards? (1 mark)

(b) State two ways in which the blood cells are adapted to their function (2 marks)

12. (a) Name two structures for gaseous exchange in aquatic plants (2 marks)

(b) What is the effect of contraction of the diaphragm muscles during breathing in mammals? (3 marks)

13. (a) Name the products of anaerobic respiration in (i) Plants (1 mark)

(ii) Animals (1 mark)

(b) What is oxygen debt? (1 mark)

14. (a) What is the meaning of the terms (i) Homeostatic (1 mark)

(ii) Osmoregulation? (1 mark)

(b) Name the hormones involved in regulating glucose level in blood (2 marks)

15. (a) Distinguish between population and community (2 marks)

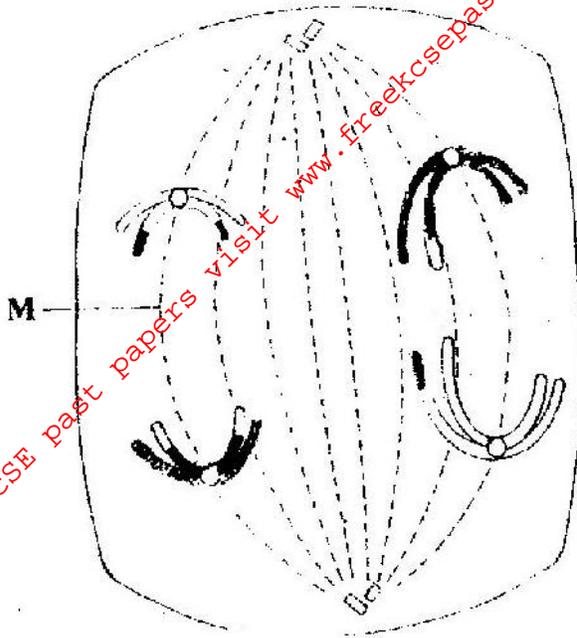
(b) Name a method that could be used to estimate the population size of the following organisms

(i) Fish in a pond (1 mark)

(ii) Black jack in a garden (1 mark)

16. State two ways in which schistosoma species is adapted to parasitic mode of life (2 marks)

17 The diagram below represents a stage during cell division



- (a) (i) Identify the stage of cell division (1 mark)
(ii) Give three reasons for your answer in (a) (i) above (2 marks)

(b) Name the structures labeled M (1 mark)

18. State two disadvantages of sexual reproduction in animals (2 marks)

19 (a) State two environmental conditions that can cause seed dormancy (2 marks)

(b) Name the part of a bean that elongates to bring about epigeal germination (1 mark)

20 (a) What is meant by the term allele? (1 mark)

(b) Explain how the following occur during gene mutation:

(i) Deletion (1 mark)

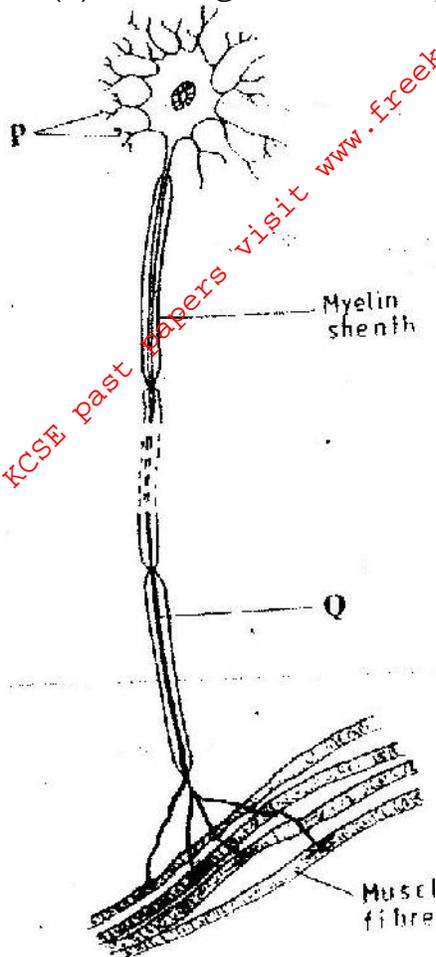
(ii) Inversion (1 mark)

(c) What is a test- cross? (1 mark)

21. (a) What is adaptive radiation (2 marks)

(b) Give a reason why organisms become resistant to drugs (1 mark)

22. (a) Where in the human body are relay neurons found (1 mark)
 (b) The diagram below represents a neurone (1 mark)



- (i) Name the neurone (1 mark)
 (ii) Name the parts labeled P and Q (2 marks)
 P.....
 Q.....

- (c) State a function of myelin sheath (1 mark)

23. (a) Name the hormone that is responsible for apical dominance (1 mark)
 (b) What is thigmotropism? (1 mark)

24. (a) state a characteristics that is common to all cervical vertebrae (1 mark)
 (b) Name two tissues in plants that provide mechanical support (2 marks)

25. (a) The action of ptyalin stops at the stomach. Explain (1 mark)
 (b) State a factor that denatures enzymes (1 mark)
 (c) Name the features that increase the surface area of small intestines (2 marks)

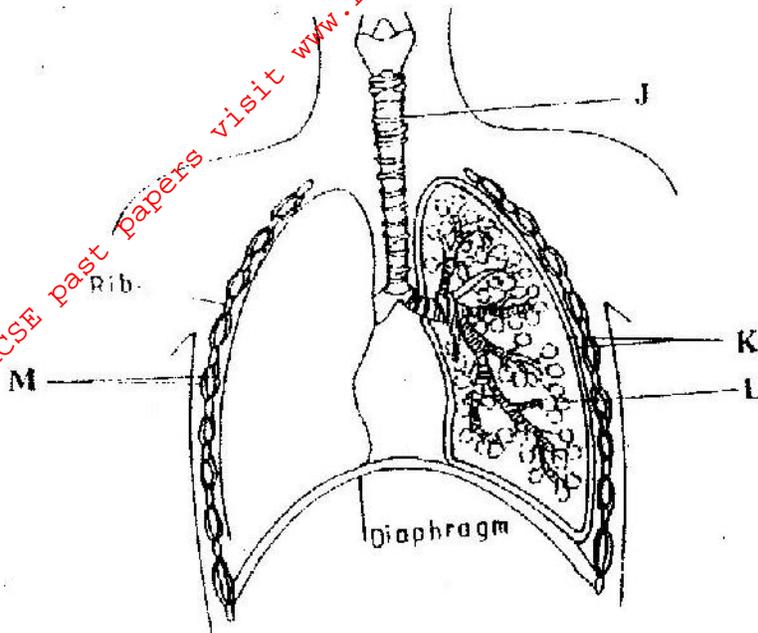
26. State one way by which HIV/AIDS is transmitted from mother to child (1 mark)

K.C.S.E 2007 BIOLOGY PAPER 2

SECTION A (40 marks)

Answer all questions in this section in the spaces provided

1. The diagram below represents some gaseous exchange structures in humans



(a) Name the structures labeled K, L, and M (3 marks)

K.....

L.....

M.....

(b) How is the structure labeled J suited to its function? (3 marks)

(c) Name the process by which inhaled air moves from the structure labeled L into blood capillaries (1 mark)

(d) Give the scientific name of the organism that causes tuberculosis in humans (1 mark)

2 (a) Explain what happens to excess amino- acids in the liver of humans (3 marks)

(b) Which portion of the human nephron are only found in the cortex? (3 marks)

(c) (i) What would happen if a person produced less antidiuretic hormone? (1 mark)

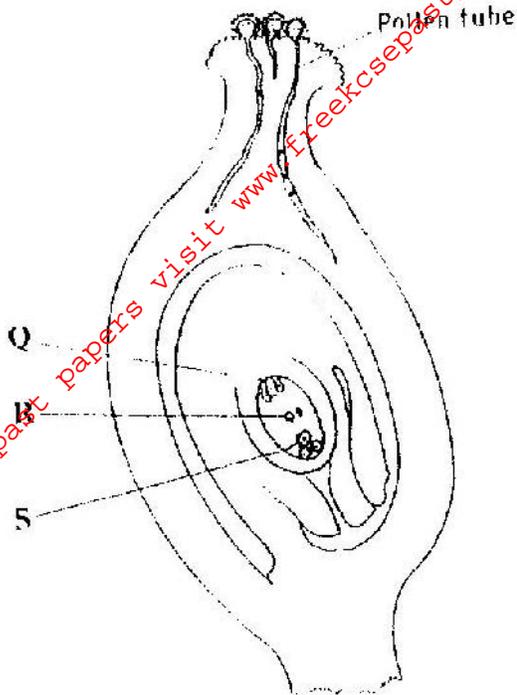
(ii) What term is given to the condition described in (c) (i) above (1 mark)

3 (a) What is meant by the following terms

(i) Protandry (1 mark)

(ii) Self sterility? (1 mark)

(b) The diagram below shows a stage during fertilization in a plant



(i) Name the parts labeled Q, R, and S (3 marks)

Q
R
S

(ii) State two functions of the pollen tube (2 marks)

(c) On the diagram label the micropyle (1 mark)

4 (a) Name the three type of muscles found in mammals and give an example of where each of them is found (3 marks)

Type of muscle	Where found
----------------	-------------

(i)
(ii)
(iii)

(b) State the difference between ball and socket and hinge joint (1 mark)

(c) State the functions of synovial fluid (2 marks)

(d) State two advantages of having an exoskeleton (2 marks)

5. In maize the gene for purple colour is dominant to the gene for white colour. A pure breeding maize plant with purple grains was crossed with a heterozygous plant.

(a) (i) Using letter G to represent the gene for purple colour, work out the genotype ratio of the offspring (5 marks)

(ii) State the phenotype of the offspring (1 mark)

(b) What is genetic engineering? (1 mark)

(c) What is meant by hybrid vigour? (1 mark)

SECTION B (40 MARKS)

Answer questions 6 (compulsory) in the spaces provided and either questions 7 or 8 in the spaces provided after questions 8

6. In the experiment to determine the effect of ringing on the concentration of sugar in phloem a ring of bark from the stem of a tree was cut and removed. The amount of sugar in grammes per 16cm^3 piece of bark above the ring was measured over a 24 hour period. Sugar was also measured in the bark of a similar stem of a tree which was not ringed. The results are shown in the table below.

Time of the day	Amount of sugar in grammes per 16cm^3 piece of bark	
	Normal stem	Ringed stem
06 45	0.78	0.78
09.45	0.80	0.91
12.45	0.81	0.01
15 45	0.80	1.04
18.45	0.77	1.00
21 45	0.73	0.95
00 45	0.65	0.88

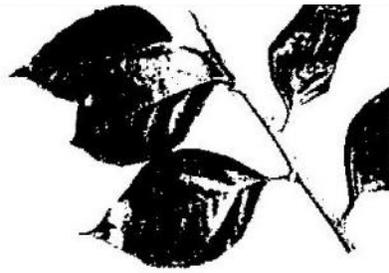
- (a) Using the same axes, plot a graph of the amount of sugar against time
(6 marks)
- (b) At what time was the amount of sugar highest in the
- (i) Ringed stem (1 mark)
 - (ii) Normal stem? (1 mark)
- (c) How much sugar would be in the ringed stem if it was measured at 0345 hours?
(1 mark)
- (d) Give reasons why there was sugar in the stems of both trees at 06 45 hours
(2 marks)
- (e) Account for the shape of the graph for the tree with ringed stem between:
- (i) 06 45 hours and 15 45 hours (3 marks)
 - (ii) 15 45 hours and 00 45 hours (2 marks)
- (f) Name the structures in phloem that are involved in the translocation of sugars
(2 marks)
- (g) Other than sugars name two compounds that are translocated in phloem
(2 marks)
7. Describe the structure and functions of the various parts of the human ear
(20 marks)
8. Describe causes and methods of controlling water pollution (20 marks)

**K.C.S.E 2007 BIOLOGY PAPER 3
PRACTICAL QUESTIONS**

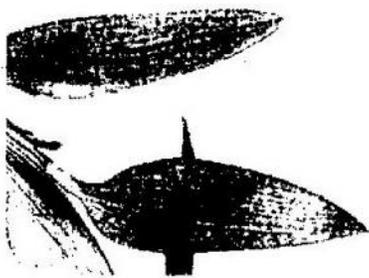
1. Below are photographs labeled P,Q,R,S,T,U and V of twigs obtained from plants examine them.



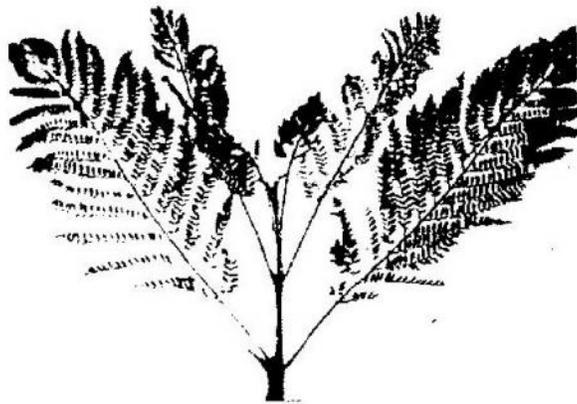
P



Q



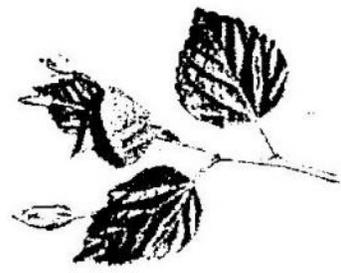
R



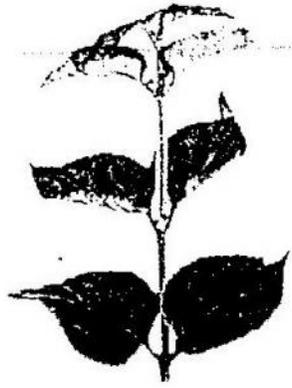
S



T



U



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

1	a Simple leaves b Compound leaves	go to 2 go to 5
2	a Leaves not veined b leaves parallel- veined	go to 3 commerlinaceae
3	a..... b leaves with smooth margin	go to 4 Nyctsginaceae
4	a Leaves alternate b	Malvaceae Verbenaceae
5	a..... b leaves bipinnate	go to 6 Bignoniaceae
6	a leaflet with serrated margin b leaflets with smooth margin	Compositae Papilioceae

(b) 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 marks)

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 mark)

Procedure (1 mark)

Observation (1 mark)

Conclusion (1 mark)

Solutions **S** is Benedict's solution

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

Food substance (1 mark)

Procedure (2 marks)

Observation (1 mark)

Conclusion (1 mark)

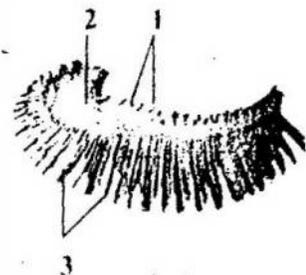
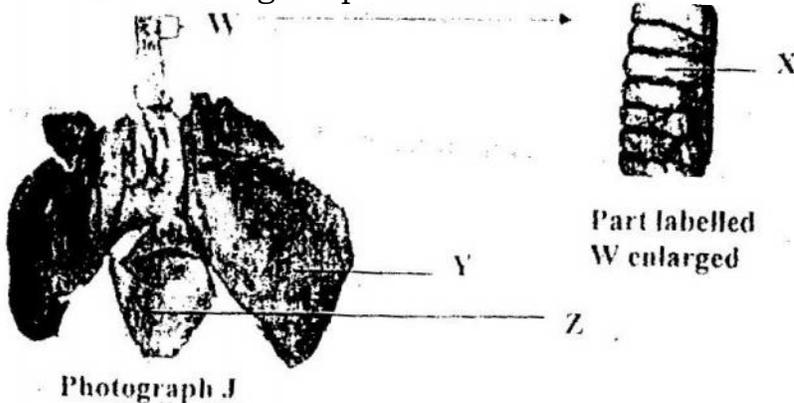
(c) Using the filter paper provided. Test for the presence of liquids in solutions P.

Procedure (2 marks)

Observation (1 mark)

Conclusion (1 mark)

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



(a) Identify the organs (2 marks)

J

K

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

(c) Name the parts labeled X, Y and Z in photographs (3 marks)

X

Y

Z

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

- 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 mark)

- 1
- 2.
- 3