Name_____ **Index No.** _____

Candidate's signature _____

Date _____

231/1
BIOLOGY
PAPER 1
THEORY
JULY/AUGUST 2014
2 HOURS

KATHONZWENI SUB-COUNTY FORM 4 PRE-TRIAL EXAMINATION
Kenya Certificate of Secondary Education
BIOLOGY
PAPER 1
2 HOURS

INSTRUCTIONS TO CANDIDATES
1. Write your name and index number in the spaces provided above.
2. Sign and write the date of examination in the spaces provided above.
3. Answer all the questions
4. Answers must be written in the spaces provided in the question paper
5. Additional pages must not be inserted
6. This paper consists of 11 printed pages
7. Candidates should check the questions paper to ascertain that all the pages are printed as indicated and no questions are missing

For examiner's use only

Question	Maximum score	Candidate's score
1 – 27	80	

This paper consists of 11 printed pages

Turn Over

1. (a) What is a specimen? (1mk)

(b) Name the chemical used for preservation of specimen in the laboratory (1mk)

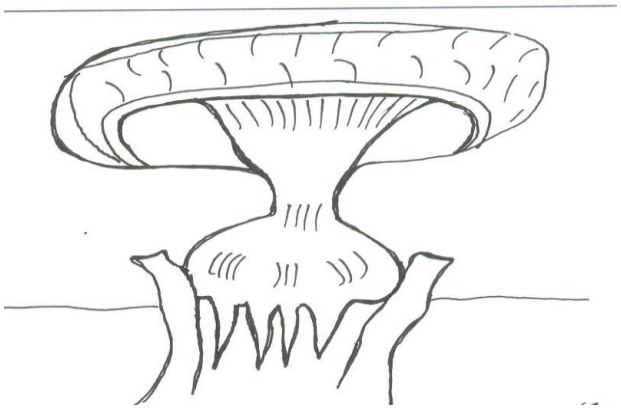
2. Explain how the following cells are specialized to perform their function
(a) Root hair cell. (1mk)

(b) Sperm cell (1mk)

3. Give a reason for the following during investigation of starch in a leaf
(a) Exposing the leaf to light for a few hours (1mk)

(b) Dipping the leaf in boiling water (1mk)

4. The following diagram represents a plant



(a) To which division does the above plant belong? (1mk)

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

(c) State one economic importance of the plant above. (1mk)

5. The following is a food chain that was presented by a pupil in a class

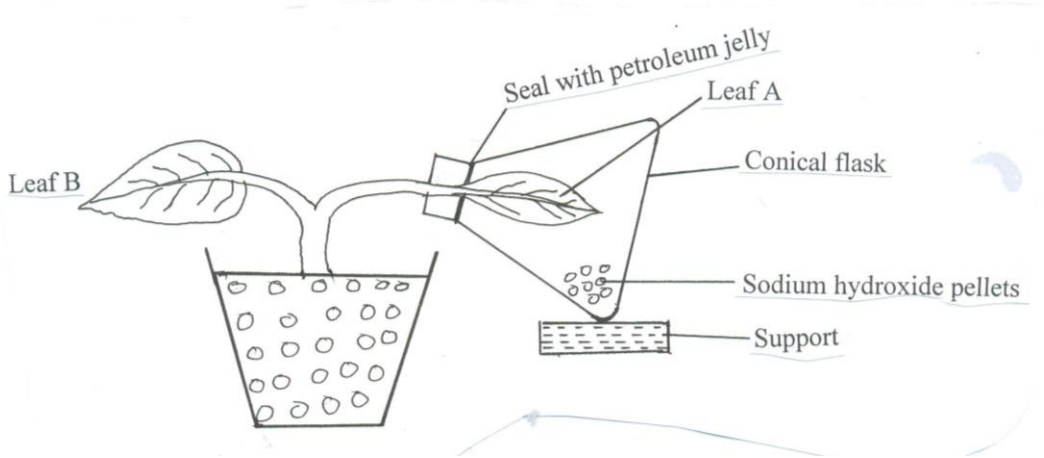
Grasshopper ⟶ lizards ⟵ chicken ⟶ hawk

State errors that are in the food chain. (2mks)

6. After four months of pregnancy, the ovaries of a woman can be removed without terminating pregnancy. However during the first four months of pregnancy the ovaries must remain intact if pregnancy is to be maintained. Explain these observations. (2mks)

7. What is the significance of chiasma formation during meotic cell division? (1mk)

8. Below is an experiment set to investigate a factor necessary for photosynthesis



(a) Suggest the aim of the experiment above (1mk)

(b) Give a reason for

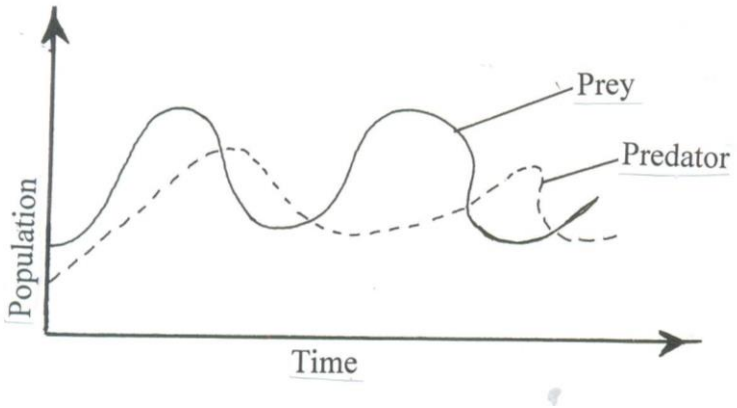
(i) Using sodium hydroxide pellets. (1mk)

(ii) Testing leaf B for starch (1mk)

(iii) Sealing the mouth of the conical flask with petroleum jelly. (1mk)

9. Mention two differences between pollen grains of wind and insect pollinated flowers (2mks)

10. (a) Distinguish between predator and prey? (2mk)



(b) The figure above shows predator/prey relationship. Study the figure and answer the questions that follow

Describe the relationship between the predator and prey. (2mks)

11. A person who is 30 years old is able to see clearly far objects and not near objects. State the defect and how it can be corrected. (2mks)

12. In a certain bird species, black colour of feather is dominant over the white colour. A heterozygous black bird is crossed over with a homozygous white bird.

(a) State the genotypes of the two parents. Use letter B to represent gene for black colour and b for white colour. (2mks)

(b) (i) Using the information above work out the crossing. (3mks)

13. What is the importance of caecum and appendix in herbivores? (1mk)

14. The table below shows the effect of wind, still air and stomatal opening on the rate of transpiration of a plant in milligrams of water lost per hour dm^2. Study the table and answer the following questions

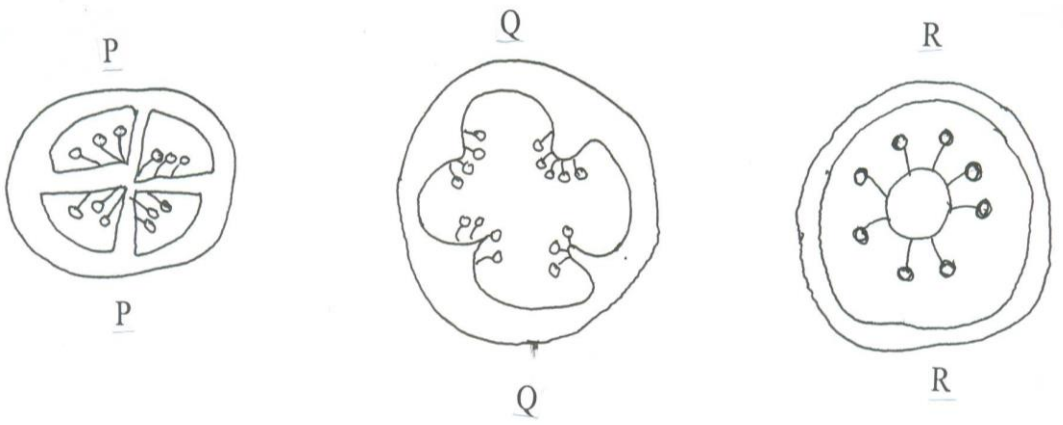
Stomatal opening (μm)	1	2	3	4	5	6	7
Windy	40	63	74	86	94	110	124
Still air	0	6	12	19	23	27	30

(a) (i) Compare the rates of transpiration in windy and still air conditions (1mk)

(ii) Explain your observation (2mks)

(b) How does stomatal opening affect transpiration rate? (2mks)

15. Below are cross sectional diagrams of fruits



Identify the type of the placentation present in the three diagrams. (3mks)

16. In a prolonged drought period, forage was scarce. It made animals reach out to higher forage and this way the giraffes got the stretched long necks.

(a) What is the term used for a characteristic such as long necks outlined. (1mk)

(b) What theory is this? (1mk)

(c) State its limitation. Explain. (2mks)

17. (a) What happens when a Rh^+ blood is given to a Rh^- recipient. (2mks)

(b) Suggest what happens if the same recipient is given another dose of Rh^+ blood in a period less than two weeks. (1mk)

18. The table below shows the effect of temperature on the activity of amylase on starch. Six test – tubes each containing a mixture of starch and amylase were placed in water baths maintained at 0^0c, 10^0c, 20^0c, 30^0c, 40^0c and 50^0c and allowed to stand. Study the table and answer the questions that follow

Test –tube	Temperature 0^0c	Time taken for starch digestion (minutes)
1	0	Starch still present after 60 minutes
2	10	22
3	20	11
4	30	5
5	40	3.5
6	50	Starch still present after 60 minutes

(a) How does temperature affect the action of amylase? (1mk)

(b) Give one reason in each case for the results obtained in the tubes kept at:

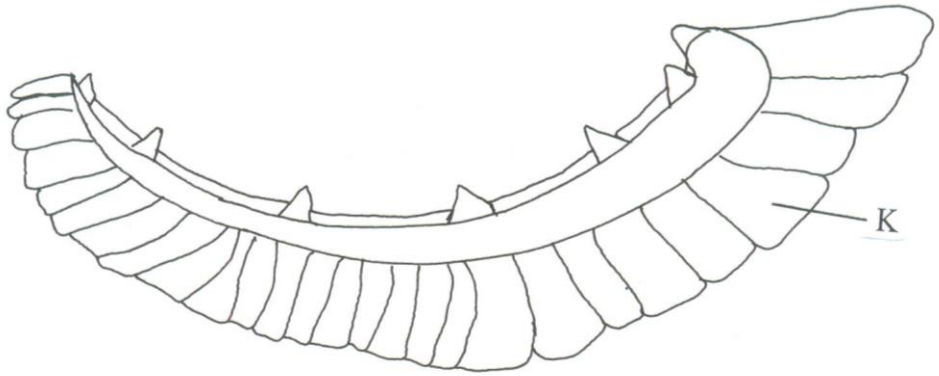
(i) 0^0c (1mk)

(ii) 50^0c (1mk)

(c) Suggest the time it would take amylase to digest starch if the temperature is kept at 0^0c (1mk)

19. By which process does the mammalian body maintain a constant temperature? (1mk)

20. The diagram below represents an organ from the body of a fish. Study it and answer the questions that follow.

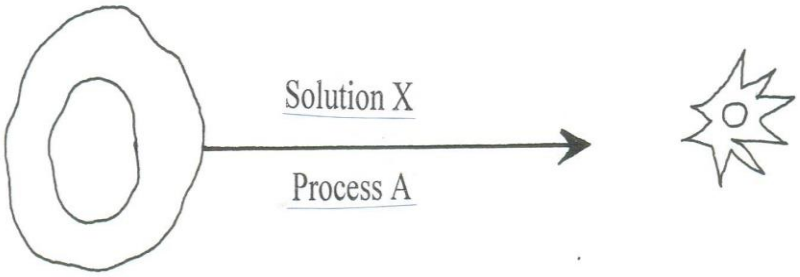


(a) Name the organ (1mk)

(b) State three ways in which part K is adapted to its function. (3mks)

21. State three functions of mammalian blood (3mks)

22. The diagram below illustrates the behaviour of a red blood cell when placed in solution X



(a) Suggest the nature of solution X (1mk)

_____

_____

_____

(b) Name process A (1mk)

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(c) Account for the appearance of the red blood cell (3mks)

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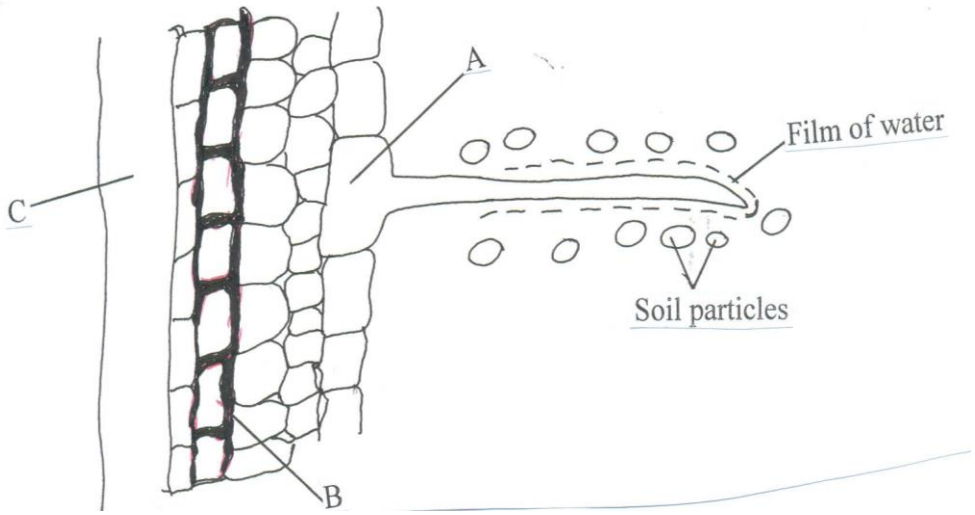
23. The diagram below illustrates the path way of water from soil into the plant



(a) Name the structures labeled C and B (2mks)

C _____

B _____

(b) State two ways in which the structure labelled A is adapted to its functions. (2mks)

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24. Explain why oxygen is important in the process of active transport in cells (2mks)

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25. State two advantages of metamorphosis to the life of insects (2mks)

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26. The process that occurs in plants is represented by the equation below;

$C_6H_{12}O_6 \longrightarrow 2C_2H_5OH + 2CO_2 + Energy$

(a) Name the process (1mk)

(b) State economic importance of the process named in (a) above. (3mks)

27. (a) Name two components of blood that are not present the glomerular filtrate (2mks)

(b) Explain why they are not present in the glomerular filtrate (2mks)

ANSWERS:

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