

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

SCHOOL..... CANDIDATE'S SIGNATURE.....

DATE.....

231/1  
BIOLOGY  
PAPER 1  
(THEORY)  
JULY/AUGUST, 2013  
TIME: 2 HOURS

## KIRINYAGA CENTRAL DISTRICT JOINT EXAMINATION - 2013

Kenya Certificate of Secondary Education  
BIOLOGY  
PAPER 1  
(THEORY)  
TIME: 2 HOURS

### INSTRUCTIONS TO CANDIDATES:

Write your **Name**, **Index Number** and **School** in the spaces provided above.  
**Sign** and write the **date** of examination in the spaces provided above.  
Answer **all** the questions in the spaces provided.

### FOR EXAMINER'S USE ONLY:

Question	Maximum Score	Candidate's Score
1 - 22	80	

1. (a) Define the term 'parthenocarpy'. (1mk)

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(b) Name **two** plant growth hormones that promote parthenocarpy. (2mks)

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2. Name the organelle that performs each of the following functions in a cell (1mk)

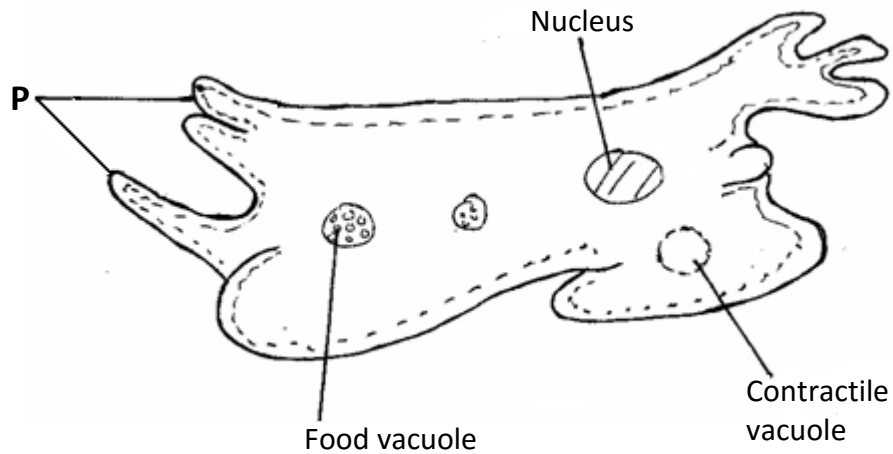
(i) Protein synthesis. (1mk)

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(ii) Transport of cell secretions. (1mk)

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3. The diagram **below** represents a certain organism.



(a) Identify the kingdom to which the organism belongs. (1mk)

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(b) Identify the part labeled **P**. (1mk)

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(c) What is the function of contractile vacuole? (1mk)

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4. Other than carbon (IV) oxide, name other products of anaerobic respiration. (2mks)

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5. (a) Name the fluid that is produced by sebaceous glands. (1mk)

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(b) State **two** functions of sweat on the human body. (2mks)

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6. (a) State **two** characteristics that are used to divide the phylum arthropoda into classes. (2mks)

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(b) Name the class with the largest number of individuals in the phylum arthropoda. (1mk)

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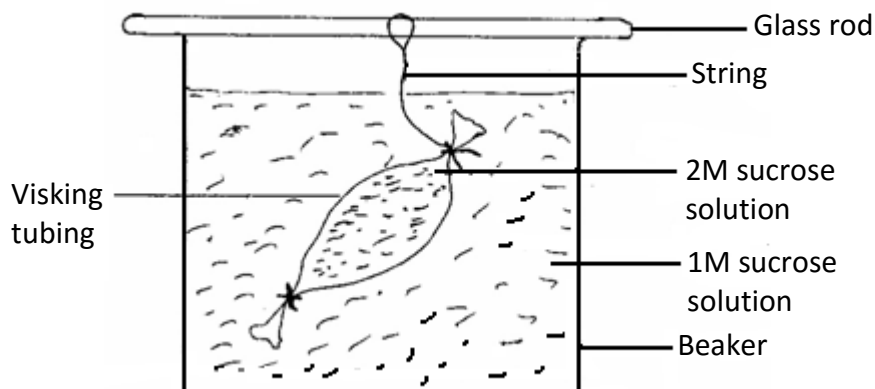
7. Why are people with blood group O referred to as universal donors? (1mk)

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8. An experiment was set up as shown in the diagram **below**.



(a) Which process is being investigated by the above experiment? (1mk)

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(b) State the expected results. (1mk)

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(c) Explain your answer in (b) above. (3mks)

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9. (a) What causes the following diseases?

(i) Diabetes mellitus. (1mk)

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(ii) Diabetes insipidus. (1mk)

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(b) How would you test that someone is a victim of diabetes mellitus in the laboratory. (3mks)

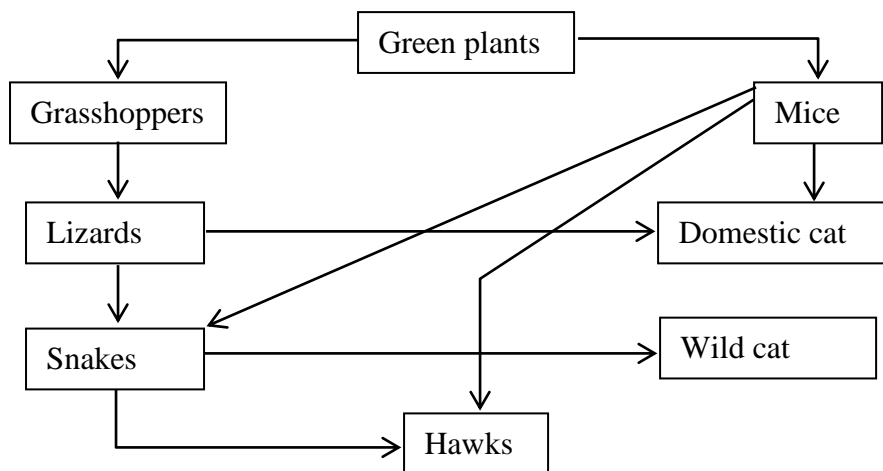
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10. The following chart shows a feeding relationship in ecosystem.



(a) Construct **two** food chains ending with a tertiary consumer in each case. (2mks)

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(b) Which organism has the largest variety of predator in food web? (1mk)

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- (c) Suggest **three** ways in which the ecosystem would be affected if there was prolonged drought. (3mks)

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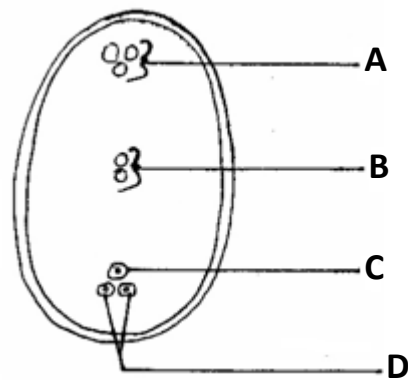
11. A man of blood group A and a woman of blood group B get married.

- (a) Using a punnet square show the possible blood groups of their offspring's if both of them are heterozygous for their blood groups. (4mks)

- (b) What is the probability that one of the children will be blood group O? (1mk)

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12. The diagram **below** shows a mature embryo sac of a flowering plant.



- (a) Name the parts labeled **A** and **D**. (2mks)

**A** \_\_\_\_\_

**B** \_\_\_\_\_

- (b) What is the function of the structure labeled B. (1mk)

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13. (a) Name the tissues that transport water in plants. (1mk)

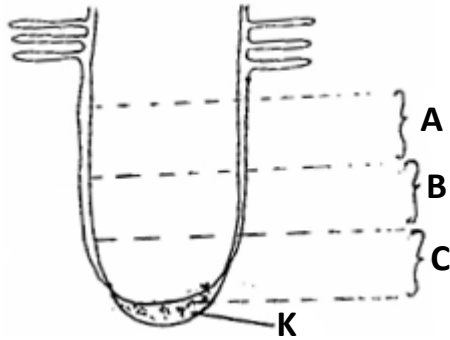
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(b) How is the tissue you named in (a) above strengthened? (1mk)

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14. The diagram below shows regions of growth in a root. Study it and answer the questions that follow.



(a) Name the zones labeled.

A \_\_\_\_\_ (1mk)

B \_\_\_\_\_ (1mk)

C \_\_\_\_\_ (1mk)

(b) State the function of part K. (1mk)

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15. The enzymes pepsin and trypsin are secreted in their inactive forms.

(a) Give the names of these inactive forms. (2mks)

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(b) Why are they secreted in an inactive form? (1mk)

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16. (a) Define the following terms: (1mk)

(i) Evolution.

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(ii) Analogous structures. (1mk)

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- (b) Describe the importance of comparative embryology as evidence of evolution. (3mks)

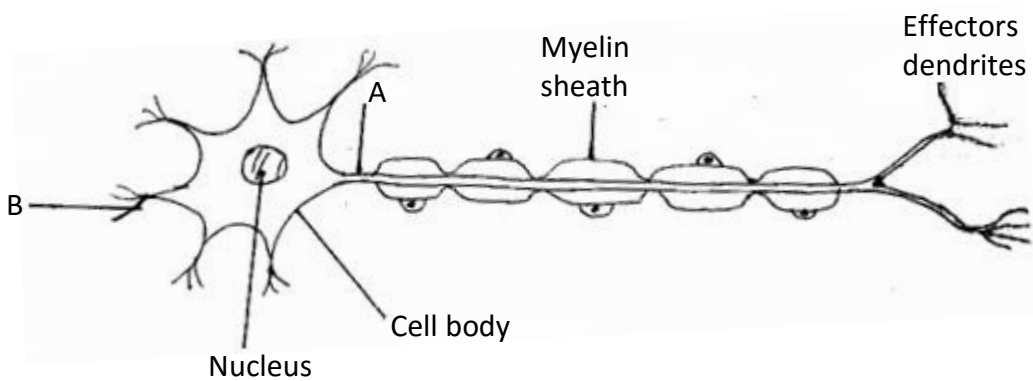
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17. Study the diagram **below** of a neurone in human being.



- (a) Identify the neurone. (1mk)

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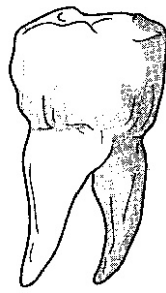
- (b) Name the parts labeled.

**A** \_\_\_\_\_ (1mk)

**B** \_\_\_\_\_ (1mk)

- (c) Using an arrow indicate the direction of movement of a nerve impulse along the neurone (1mk)

18. Study the diagram of the mammalian tooth **below** and answer the questions that follow.



(a) Identify the tooth. (1mk)

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

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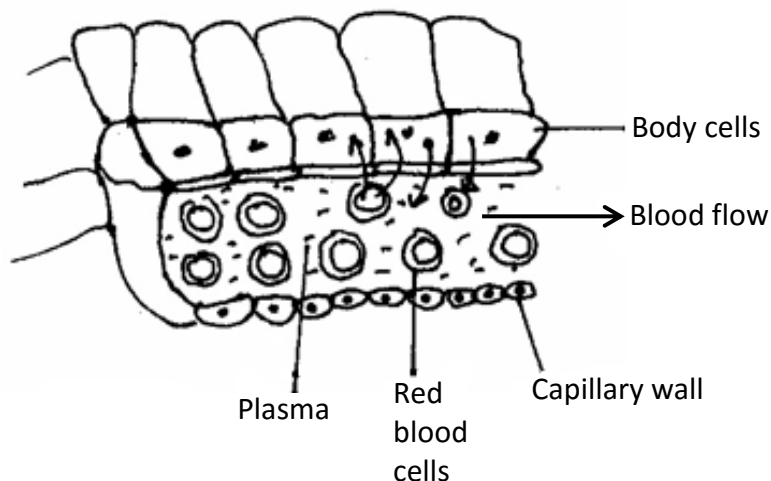
(c) State **one** adaptation of the tooth to its function. (1mk)

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19. The diagram **below** shows gaseous exchange in tissues.



(a) (i) Name the gas that diffuses.  
I To the body cells \_\_\_\_\_ (1mk)

II From body cells \_\_\_\_\_ (1mk)

(b) Which compound dissociates to release the gas named in (a)(i) above. (1mk)

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(c) What is tissue fluid?

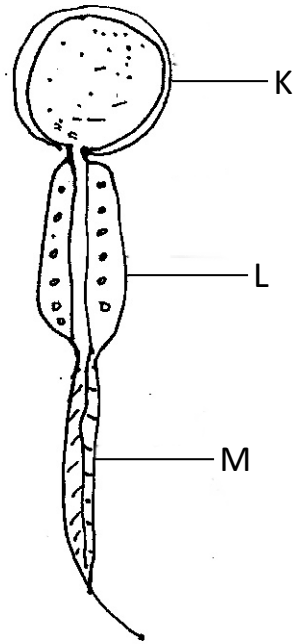
(1mk)

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20. The diagram **below** represents one of the specialized cells found in the human body.



(a) Identify the cell.

(1mk)

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(b) What is the function of the cell?

(2mks)

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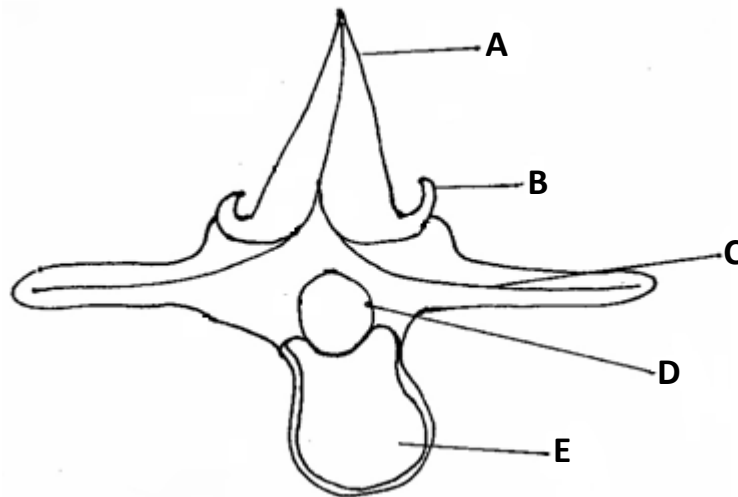
(d) Name the parts labeled.

**K** \_\_\_\_\_ (1mk)

**L** \_\_\_\_\_ (1mk)

**M** \_\_\_\_\_ (1mk)

21. The diagram **below** represents the anterior view of a certain vertebra shown **below**.



(a) With a reason, identify the type of vertebra shown **above**. (2mks)

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(b) Name the parts labeled.

(i) **A** \_\_\_\_\_ (1mk)

(ii) **D** \_\_\_\_\_ (1mk)

(c) State the function of part **E**. (1mk)

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22. Complete the table **below** on mineral nutrition in plants.

Mineral element	Function	Deficiency symptoms
	Synthesis of proteins and protoplasm	Stunted growth and yellowing of leaves
Calcium		
	Forms part of chlorophyll	Yellowing of leaves

(4mks)