THE KENYA NATIONAL EXAMINATIONS COUNCIL
Kenya Certificate of Secondary Education

231/1 – BIOLOGY – Paper 1

Nov. 2018 – 2 hours

Name ..... **Index Number** .....

Candidate's Signature ..... **Date** .....

Instructions to candidates

(a) *Write your name and index number in the spaces provided above.*
(b) *Sign and write the date of examination in the spaces provided above.*
(c) *Answer **all** the questions in this question paper.*
(d) *All answers must be written in the spaces provided.*
(e) ***This paper consists of 9 printed pages.***
(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 the questions in English.***

For Examiner's Use Only

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

17	18	19	20	21	22	23	24	25	26	27	Grand Total

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

1. (a) Name the cell organelle found in abundance in the white blood cells. (1 mark)

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

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2. State **two** observable features that place a millipede into its Class. (2 marks)

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3. Which sets of teeth would be used in chewing sugarcane for maximum extraction of sap? (2 marks)

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4. A group of form two students placed a fresh leaf in warm water. They observed that air bubbles formed on the surface of the leaf.

(a) What biological process were they investigating? (1 mark)

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(b) Name the structures from which the air bubbles were coming from. (1 mark)

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(c) Explain the distribution of the structures named in (b) above on the leaf surfaces of a land plant. (2 marks)

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5. State why it is important for plants to lose water to the atmosphere. (3 marks)

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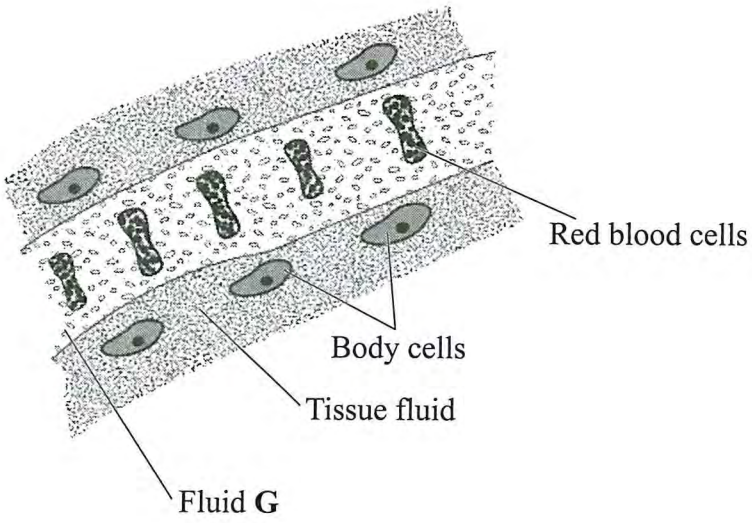
6. The diagram below illustrates tissue fluid and cells surrounding a capillary.



(i) Name fluid **G**. (1 mark)

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(ii) Give **two** ways by which fluid **G** is different from tissue fluid. (2 marks)

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7. (a) Define respiration. (1 mark)

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(b) State **three** activities in the human digestive system that depend on respiration. (3 marks)

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8. State **three** ways in which blood capillaries are structurally adapted to their functions. (3 marks)

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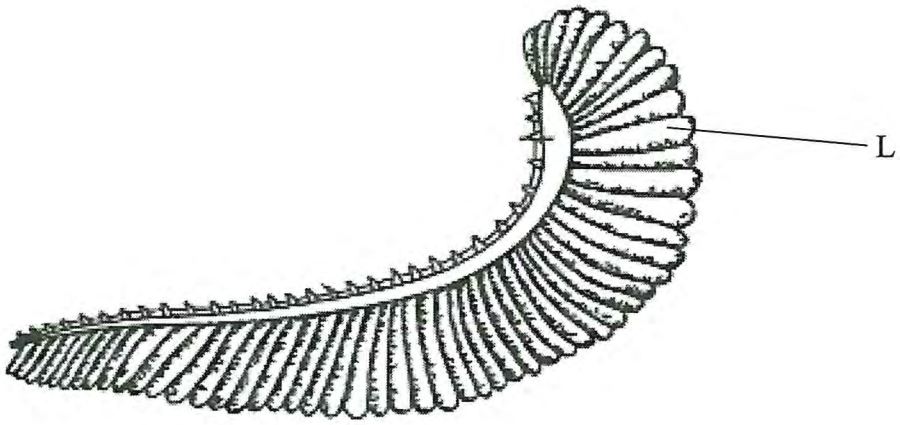
9. The diagram below represents an organ in a bony fish.



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(a) Name the organ. (1 mark)

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(b) Describe how air in water reach the capillaries inside structure **L**. (3 marks)

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10. Name **two** products of respiration in plants. (2 marks)

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11. (a) State **one** homeostatic role of the human skin. (1 mark)

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(b) Name **three** structures of the skin essential for its homeostatic function. (3 marks)

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12. Explain why the nephron is long and convoluted. (3 marks)

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13. State **two** limitations of using a quadrat to estimate the population of organisms. (2 marks)

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14. The diagram below illustrates a germinating seedling.

(a) Name the type of germination illustrated in the diagram. (1 mark)

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(b) Describe how the type of germination named in (a) above is brought about. (3 marks)

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15. Explain why a bony fish dies shortly after being removed from water. (4 marks)

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16. Name the bones that articulate to form a ball and socket joint at the hip. (2 marks)

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17. Explain the role of carbonic anhydrase in red blood cells. (3 marks)

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18. A tall, light skinned lady with pimples on her face has long hair and limps.

(a) List **two** features which the lady has that are due to inheritance. (2 marks)

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(b) Explain why most recessive genes are expressed phenotypically in male offspring of humans. (3 marks)

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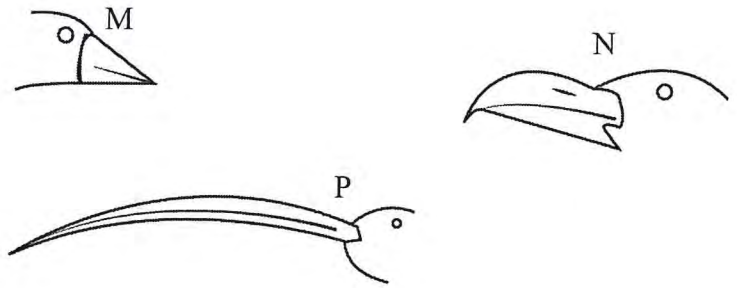
19. The diagrams below illustrate some forms of beaks in birds.



(a) Which diagram represents the beak from which the others are likely to have evolved? (1 mark)

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(b) Explain your answer in (a) above. (3 marks)

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20. (a) Define the term analogous structures. (1 mark)

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(b) Give **two** illustrations of analogous structures in mammals. (2 marks)

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21. State **two** ways in which plants with weak stems obtain mechanical support. (2 marks)

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22. What does the term evolution mean? (1 mark)

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23. State **two** characteristics of living things illustrated in the photograph below. (2 marks)

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24. Explain why a camel has a longer nephron than a whale. (3 marks)

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