

NAME:.....ADM NO.INDEX

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231/1
BIOLOGY
Theory
Paper 1
March/April, 2017
Time: 2 Hours

MOI HIGH SCHOOL – KABARAK

FORM FOUR END TERM

Kenya Certificate of Secondary Education (K.C.S.E)

231/1

Biology

Paper 1

March/April, 2017

Instructions To Candidates

Answer all the questions on the spaces provided.

FOR EXAMINER'S USE ONLY

Question	Maximum score	Candidate's score
1-28	80	

1. Define the following branches of Biology.

(i) Physiology.

(1 mark)

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(ii) Dermatology.

(1 mark)

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2. The cell membrane is said to be polarized. State the meaning and significance of a polarized membrane.

Meaning,

(1 mark)

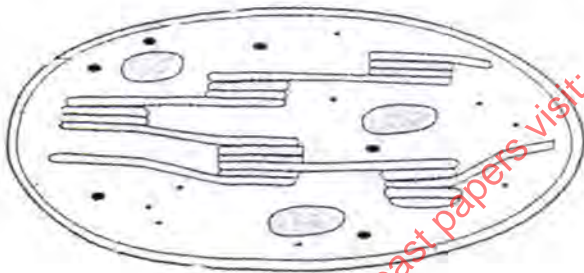
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Significance.

(1 mark)

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3. The diagram below represents an organelle.



(a) State the function of the organelle.

(1 mark)

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(b) Label on the diagram, the parts of the organelle where;

(i) Oxygen gas is produced as a byproduct.

(1 mark)

(ii) Carbon (iv) oxide is fixed.

(1 mark)

4. State the functions of bile salts. (2 marks)

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5. Name **two** classes of phylum arthropoda whose members have a cephalothorax. (2 marks)

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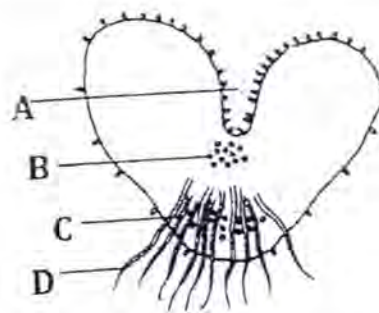
6. Name the distinguishing features of class Aves. (2 marks)

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7. State **two** ways in which pteridophyta differ from spermatophyte. (2 marks)

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8. The diagram below shows the gametophyte of a fern plant.



(i) Name the structure shown above. (1 mark)

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(ii) Name the part labelled B and D. (2 marks)

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9. (a) Define the term "Alternation of generation". (1 mark)

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(b) Name **two** plant divisions which exhibit alternation of generation. (2 marks)

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(c) State the importance of gametophyte to a sporophyte. (1 mark)

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10. The equation below represents oxidation of a certain food substance.



(a) Calculate the respiratory quotient of the substance being oxidized. (2 marks)

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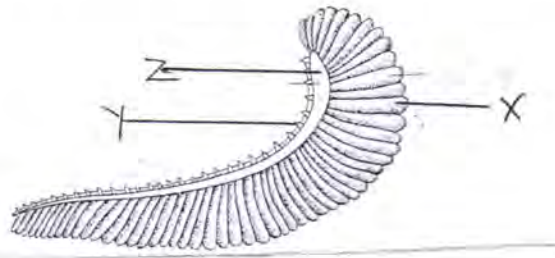
(b) Name the likely food substance being oxidized. (1 mark)

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(c) State **one** reason why respiratory quotient values are important to work out. (1 mark)

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11. Study the diagram below and answer the questions that follow.



(a) Name the parts labelled.

(i) Y(1 mark)

(ii) Z(1 mark)

(iii) X(1 mark)

(b) State an adaptation of each part labelled Y and Z in the diagram.

(3 marks)

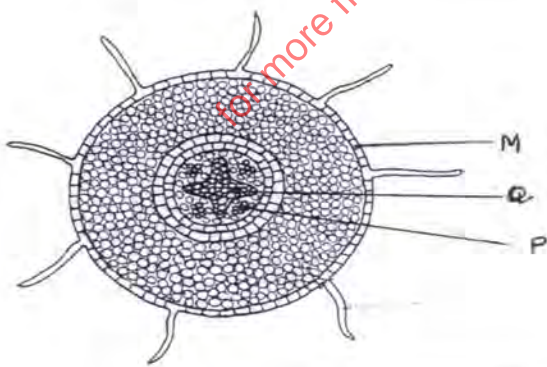
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12. Study the section below and answer the questions that follow.



(a) Identify the section.

(1 mark)

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(b) Name the parts labelled M and Q. (2 marks)

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13. State **two** components of a phloem. (2 marks)

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14. Explain what happens in prophase I of meiosis. (1 mark)

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15. (a) Define taxis. (1 mark)

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(b) State **two** biological importance of tactic responses. (2 marks)

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16. The figure below shows a stem of a plant growing around a tree trunk.



(a) Identify the type of response which causes the twisting growth. (1 mark)

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(b) Explain how the twisting process is accomplished. (2 marks)

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17. Define the following terms used in evolution and give an example in each case.

(a) Homologous structures. (2 marks)

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(b) Analogous structures. (2 marks)

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18. Explain comparative embryology as an evidence of organic evolution. (3 marks)

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19. State the demerits of Lamarck's theory of evolution. (2 marks)

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20. State the functions of the following parts of a germinating seed. (1 mark)

a) Coleorhiza.

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(b) Coleoptile. (1 mark)

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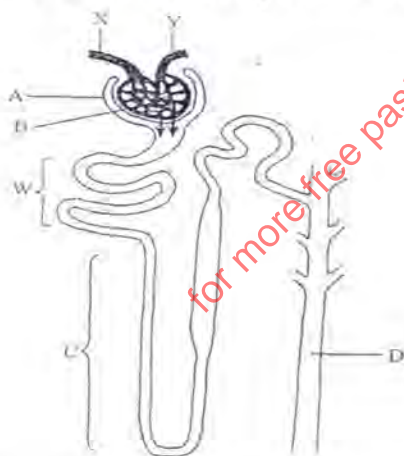
21. (a) A horse and a donkey belong to the same genus. The two organisms may interbreed to produce an infertile offspring. Explain. (1 mark)

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(b) Distinguish between classification and Taxonomy. (1 mark)

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22. The diagram below represents the functional unit of a mammalian kidney. Study it and answer the questions that follow.



(a) Identify the structure. (1 mark)

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(b) Select the letters representing two structures between which ultrafiltration takes place. (2 marks)

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23. (a) Describe the role of hypothalamus in thermoregulation. (2 marks)

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(b) State the role of the following hormones in homeostasis.

(i) Insulin. (1 mark)

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(ii) Glucagon. (1 mark)

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24. (a) State the significance of a test cross in genetics. (1 mark)

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(b) State the function of Deoxyribonucleic acid (DNA) molecule. (1 mark)

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25. What is the adaptive advantage of sickle cell trait? (2 marks)

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26. Below are two different views of a mammalian bone. Study it and answer the questions that follow.



(a) Identify the bone. (1 mark)

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

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(c) Name each of the two views. (2 marks)

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27. Explain how plants compensate for their inability to locomote. (3 marks)

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28. The photographs below shows three bean seedlings that are of same age but were grown under different environmental conditions.



(a) Based on the external appearance of the seedlings, suggest the conditions under which each of them was grown. (3 marks)

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(b) Give **two** differences between R and S. (2 marks)

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