

2528/103

2922/103

ENVIRONMENTAL BIOLOGY

Oct./Nov. 2019

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN ENVIRONMENTAL SCIENCE AND TECHNOLOGY

MODULE I

ENVIRONMENTAL BIOLOGY

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

answer booklet;

non-programmable scientific calculator.

This paper consists of TWO sections; A and B.

Answer ALL the questions in section A and any THREE questions from section B in the answer booklet provided.

Each question in section A carries 4 marks while each question in section B carries 20 marks.

Maximum marks for each part of a question are as shown.

Candidates should answer the questions in English.

This paper consists of 3 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

SECTION A (40 marks)

Answer ALL the questions in this section.

1. Draw a labelled diagram of the Golgi complex of a cell. (4 marks)
2. Identify the labelled parts A, B, C and D of the mitochondrion shown in figure 1. (4 marks)

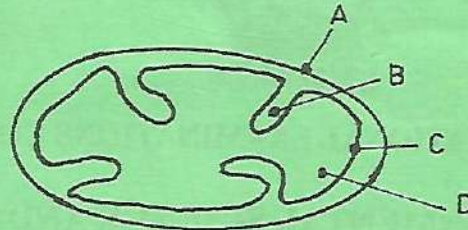
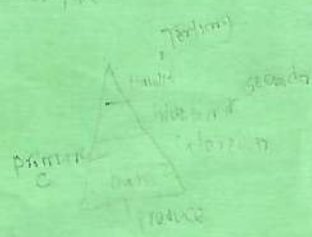


Fig. 1

3. List any four phyla of the animal Kingdom. (4 marks)
4. Name four external features used for identifying the mammalian class. (4 marks)
5. Draw a labelled diagram of a motor neurone. (4 marks)
6. (a) Define the term homeostasis. *maintenance of internal constant environment* (2 marks)
(b) Distinguish between hemeotherms and poikilotherms. (2 marks)
7. (a) Define the term mitosis. (1 mark)
(b) State three functions of mitosis in the cells of a human being. (3 marks)
8. List any four common characteristics of discontinuous variation in human beings. (4 marks)
9. Construct a pyramid of numbers using the following organisms: Blue bird, Caterpillar, Hawk, Oak tree. (4 marks)
10. Name four processes involved in the carbon cycle. (4 marks)

*Primary: the cell for growth and rest after
the cell has to grow to a certain height
secondary: the cell for growth to a certain height
tertiary: the cell for growth to a certain height*



SECTION B (60 marks)

Answer any **THREE** questions from this section.

11. (a) Describe the **three** Mendel's laws of inheritance. (12 marks)
- (b) Outline the selective breeding process of cows for high milk production. (8 marks)
12. (a) Describe the **three** parts of an acacia plant cell wall. (12 marks)
- (b) State **four** functions of the cell wall described in (a) above. (4 marks)
- (c) List **four** ways through which plants lose light energy in the food chain. (4 marks)
13. (a) Describe **seven** features of natural selection necessary for formation of new animal species. (14 marks)
- (b) Explain **three** features of Lamarck's theory of evolution. (6 marks)
14. (a) List the **four** principles of cell theory. (4 marks)
- (b) Describe **eight** differences between prokaryotic and eukaryotic cells. (16 marks)
15. (a) Describe **six** differences between nervous system and endocrine system. (12 marks)
- (b) (i) Define the term food web. (2 marks)
- (ii) List **six** factors that may lead to the extinction of bee population due to imbalance in the food web. (6 marks)

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