

2528/103
2922/103
ENVIRONMENTAL BIOLOGY
June/July 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 indicated.

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. Differentiate between leucoplasts and chloroplasts. (4 marks)
2. Draw a labelled diagram of a plant cell wall. (4 marks)
3. With the aid of labelled diagram, describe the anaphase process in a mitotic cell. (4 marks)
4. Draw a general structure of a nucleotide. (4 marks)
5. Construct a food chain for the following organisms found in a desert: Meerkat, grasshopper, eagle and grass. (4 marks)
6. State **four** benefits of genetic engineering in crop production. (4 marks)
7. Describe how the human body regulates blood sugar. (4 marks)
8. List any **four** divisions of the plant kingdom. (4 marks)
9. Name **four** sources of atmospheric carbon dioxide in the carbon cycle. (4 marks)
10. State **four** characteristic features of a cockroach. (4 marks)

SECTION B (60 marks)

Answer any THREE questions from this section.

11. (a) Explain six differences between an animal cell and a plant cell. (12 marks)
(b) State **four** differences between mitosis and meiosis. (8 marks)
12. (a) With the use of a labelled diagram, explain the Sigmoid population growth curve. (12 marks)
(b) Explain **four** factors that may influence the change in size of a population. (8 marks)



13. (a) Describe classification as used in taxonomy. (3 marks)
- (b) Outline the seven levels of taxonomy. (7 marks)
- (c) Explain the five kingdoms of classifying organisms. (10 marks)
14. (a) Explain five theories of the origin of life on earth. (10 marks)
- (b) Explain five forms of gene mutation in a deoxyribonucleic acid. (10 marks)
15. (a) Explain six reasons for classifying organisms. (12 marks)
- (b) Explain four ways through which the human body regulates heat on exposure to a cold weather. (8 marks)

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