

2528/103  
2922/103  
ENVIRONMENTAL BIOLOGY  
June/July 2016  
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;*

*A 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** questions in this section.

1. State **four** kingdoms composed of organisms with eukaryotic cells. (4 marks)
2. Distinguish between classification and identification of organisms. (4 marks)
3. Name **four** levels of organization of human body starting with cells. (4 marks)
4. Identify any **four** key features of molluscs that make them different from other organisms. (4 marks)
5. Draw the following patterns of plant cell wall thickening:
  - (a) Annular; (1 mark)
  - (b) Spiral; (1 mark)
  - (c) Scalariform; (1 mark)
  - (d) pitted. (1 mark)
6. Explain the regulation of glucose level in blood of a human body. (4 marks)
7. Differentiate between chloroplasts and chromoplasts. (4 marks)
8. A deer is a mammal that lives in tropical deserts. It has large ears and is inactive during the day when temperatures are high.
  - (a) Explain the importance of the deer's large ears in the regulation of its body temperature. (2 marks)
  - (b) State any **two** activities that may raise the body temperature of the deer during the day. (2 marks)
9. State **four** environmental factors that determines variation in living organisms. (4 marks)
10. State **four** observations made by Darwin concerning Natural Selection theory. (4 marks)





**SECTION B (60 marks)**

*Answer any THREE questions from this section.*

11. (a) Explain **five** differences between continuous variation and discontinuous variations in living organisms. (10 marks)
- (b) Give any **five** reasons that make fruit fly (*Drosophila*) a suitable subject for genetic experiments. (10 marks)
12. (a) Describe the **four** kinds of organisms that live in aquatic system. (8 marks)
- (b) State **six** benefits derived from the marine ecosystem in respect of the following:
- (i) ecological; (6 marks)
- (ii) economic. (6 marks)
13. (a) With the aid of a diagram, describe the structure of a neuron. (8 marks)
- (b) List **six** differences between nervous and endocrine systems. (12 marks)
14. (a) With the aid of a diagram, describe the carbon cycle. (14 marks)
- (b) Explain **three** ways of improving soil fertility for increased crop production. (6 marks)
15. (a) With the aid of diagrams, explain the **three** population growth survivorship curves. (14 marks)
- (b) Sketch a labelled diagram of a normal population growth curve. (3 marks)
- (c) Sketch the age structures for countries with the following population characteristics:
- (i) Rapid growth; (1 mark)
- (ii) Zero growth; (1 mark)
- (iii) Negative growth. (1 mark)

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