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Exam

2404/301
TAXONOMY, ECOLOGY, SOIL STUDY,
HERBARIUM, AQUARIUM AND VIVARIUM
Oct./Nov. 2018
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN APPLIED BIOLOGY

TAXONOMY, ECOLOGY, SOIL STUDY, HERBARIUM, AQUARIUM AND VIVARIUM

3 hours

INSTRUCTIONS TO CANDIDATES

Your should have the following for this examination:

Answer booklet;

Scientific calculator (battery operated).

This paper consists of TWO sections; A and B.

Answer ALL questions in section A and any THREE questions from section B.

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 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 the classes *chilopoda* and *arachnida*. (4 marks)
2. Explain:
 - (a) how the "leaves" of bryophytes differ from the true leaves of ferns. (2 marks)
 - (b) Why part of the life cycle of fern is dependent on water. (2 marks)
3. Distinguish between artificial classification and natural classification. (4 marks)
4. (a) Define the term trophic efficiency. (1 mark)
(b) Explain why net primary production is often used to compare the efficiencies of different ecosystems. (3 marks)
5. List any **four** human activities which add carbon to the atmosphere. (4 marks)
6. Explain why glassworts though halophyte have xenomorphic features. (4 marks)
7. Describe the characteristics of soils formed from each of the following parent materials:
 - (a) granite rock; (2 marks)
 - (b) igneous rocks. (2 marks)
8. List the factors that determine the capacity of soil to hold cations. (4 marks)
9. Give any **four** mechanical methods of conserving soil against erosion. (4 marks)
10. Describe the different forms of commercial feeds used in feeding fish in an aquarium. (4 marks)

feral

fuel

fuel



SECTION B (60 marks)

Answer any THREE questions from this section.

11. (a) Describe the various methods of mounting herbarium specimen on herbarium sheets. (15 marks)
- (b) Identify the tools used in herbarium collection excursion. (5 marks)
12. (a) State any five predisposing factors to fish diseases in ponds. (5 marks)
- (b) Describe any five abnormal behaviours common to sick fish in an aquarium. (10 marks)
- (c) Outline the storage of museum specimen. (5 marks)
13. (a) Explain how deforestation increases the atmospheric carbon dioxide. (6 marks)
- (b) (i) Describe the effects of eutrophication on the ecosystem. (6 marks)
- (ii) Relate the effects of eutrophication to human activities. (8 marks)
14. (a) Give any six general characteristics of phylum nematodes. (6 marks)
- (b) Describe the phylum filicinophyta. (8 marks)
- (c) Define:
- (i) soil structure; (3 marks)
- (ii) soil texture. (3 marks)
15. Explain:
- (a) Chemical rock weathering processes used in soil formation. (12 marks)
- (b) The effects of soil acidification to plant life. (8 marks)



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