

2914/202

TAXONOMY, ANATOMY AND PHYSIOLOGY

Oct./Nov. 2021

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN APPLIED BIOLOGY

MODULE II

TAXONOMY, ANATOMY AND PHYSIOLOGY

3 hours

INSTRUCTIONS TO CANDIDATES

This paper consists of TWO sections; A and B.

Answer ALL 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 indicated.

Candidates should answer the questions in English.

This question 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. (a) Name the six classes of the phylum Chordata. (3 marks)
- (b) Give the phylum for each of the following organisms:
- (i) housefly;
- (ii) slug.

(1 mark)

2. Match the organisms in column A with their respective division in column B.

	Column A		Column B
(a)	Chlamydomonas	(a)	Bryophyta
(b)	Liver worts	(b)	Pteridophyta
(c)	Eagle fern	(c)	Spermatophyta
(d)	Cactus	(d)	Chlorophyta

(4 marks)

3. Classify the butterfly up to the order level. (4 marks)

4. Name the condition associated with deficiency of each of the following:

- (a) vitamin K; (1 mark)
- (b) vitamin B₁; (1 mark)
- (c) phosphorus; (1 mark)
- (d) sodium. (1 mark)

5. (a) State **two** structural differences between arteries and veins. (2 marks)

- (b) Relate the structure of capillaries to their function. (2 marks)

6. Describe the protective role of the skin. (4 marks)

7. Describe the hydrostatic skeleton. (4 marks)

8. Explain the mechanism of opening of stomata. (4 marks)

9. Explain the hypothesis of cytoplasmic streaming in translocation. (4 marks)

10. State **two** advantages and **two** disadvantages of asexual reproduction in plants. (4 marks)

SECTION B (60 marks)

Answer any THREE questions from this section.

11. Table I shows characteristics of insects A, B, C, D, E and F.

Table I

Insect	Characteristics
A	Large wings
B	Very long rear legs, small wings, antennae in front of head
C	Antennae to the rear of the head, very long rear legs, small wings
D	Shorter rear legs, horned head, small wings
E	No wings, small eyes, shorter rear legs
F	Shorter rear legs, small wings, larger eyes

Construct a dichotomous key for identification of the insects. (20 marks)

12. (a) Describe the mechanism of contraction and relaxation in skeletal muscles. (12 marks)
- (b) Draw a labelled diagram of a synovial joint. (8 marks)
13. (a) Relate the structure of the alveoli to its function. (8 marks)
- (b) Explain the differences in structural adaptations of insect pollinated and wind pollinated flowers. (12 marks)
14. (a) Compare and contrast tactic and tropic responses. (12 marks)
- (b) Explain the adaptation of the chloroplast to its function. (8 marks)
15. (a) Using a labelled diagram, describe the structure of a nephron. (15 marks)
- (b) Explain excretion in plants. (5 marks)

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