

2914/104
TAXONOMY, CYTOLOGY
AND MICROBIOLOGY
June/July 2022
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN APPLIED BIOLOGY

MODULE I

TAXONOMY, CYTOLOGY AND MICROBIOLOGY

3 hours

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INSTRUCTIONS TO CANDIDATES

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.

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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 questions in this section.

1. State **four** functions of the cell wall in bacteria. (4 marks)
2. Outline **four** factors that determine the potency of disinfectants. (4 marks)
3. Name any **two** examples of the following types of media:
 - (a) enrichment media; (2 marks)
 - (b) selective media. (2 marks)
4. State **four** functions of nucleus in a cell. (4 marks)
5. Describe the interphase stage of mitosis. (4 marks)
6. Distinguish between each of the following terms:
 - (a) hypotonic solution and hypertonic solution; (2 marks)
 - (b) phagocytosis and pinocytosis. (2 marks)
7. State the functions of each of the following parts of a microscope:
 - (a) body tube; (1 mark)
 - (b) stage; (1 mark)
 - (c) substage; (1 mark)
 - (d) coarse adjustment knob. (1 mark)
8. Match each of the following organisms with their phylum in kingdom Protista.

Organism	Phylum
Trypanosome	Phytoflagellata
Amoeba	Ciliophora
Paramecium	Sarcodina
Euglena	Zooflagellata

(4 marks)

9. (a) Define the term 'binomial nomenclature'. (2 marks)
 (b) Distinguish between phylogenetic and phenetic classification. (2 marks)
10. List the taxonomic units in their chronological order. (4 marks)
- Set of rules that deal with double naming system of organisms*
Phylogenetic
K-P-C-O-F-G-S

SECTION B (60 marks)

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

11. (a) Highlight **ten** characteristics of an ideal antiseptic. (10 marks)
 (b) Differentiate between an animal and a plant cell. (10 marks)
12. (a) Explain **six** factors affecting the rate of diffusion. (12 marks)
 (b) Describe the general characteristics of kingdom Fungi. (8 marks)
13. Describe the biosafety levels of laboratories. (20 marks)
14. (a) Explain the classification of fungi based on formation of spores, giving specific examples in each case. (15 marks)
 (b) Highlight the economic importance of protists. (5 marks)
15. (a) Describe the **three** sub kingdoms of kingdom Monera. (12 marks)
 (b) Draw and name **four** types of flagella arrangements in bacteria. (8 marks)
- Spores, viruses*
Temp, pH, salt conc, surface area
Basidiomycota - chytridiomycota
Zygomycota
Ascomycota
Containment
max contain
Eukarya - Archaea
- Eubacteria

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