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2914/104
TAXONOMY, CYTOLOGY
AND MICROBIOLOGY
June/July 2020
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN APPLIED BIOLOGY

MODULE I

TAXONOMY, CYTOLOGY AND MICROBIOLOGY

3 hours

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.

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.

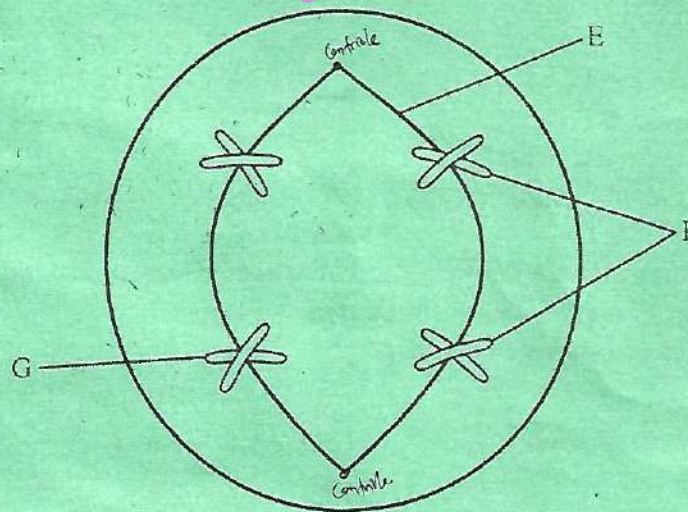
This paper consists of 3 printed pages.

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. (a) Differentiate between artificial classification and natural classification. (2 marks)
- (b) Explain phylogenetic classification system. (2 marks)
2. Describe characteristics of class Ascomycetes in terms of:
 - (a) cell organization; (1 mark)
 - (b) hyphae structure; (1 mark)
 - (c) mode of nutrition; (1 mark)
 - (d) form of carbohydrate storage. (1 mark)
3. Describe asexual reproduction in algae. (4 marks)
4. Outline the procedure of focusing a specimen under the oil immersion objective. (4 marks)
5. Figure 1 represents a stage in cell division.



1x
 p x
 M = equat
 A = pole
 T x

Fig. 1

- (a) Identify the stage of cell division. (1 mark)
- (b) Name the parts labelled E, F and G. (3 marks)
6. Differentiate between mitosis in plant cell and animal cell. (4 marks)

7. State **four** functions of golgi bodies. (4 marks)
8. Differentiate between each of the following:
- (a) ^{solid} enrichment media and ^{-sp of growth reqd} enriched media; (2 marks)
- (b) ^{differentiate} differential media and ^{-solid} selective media. (2 marks)
9. Describe the **four** risk groups of biohazards. (4 marks)
10. List **four** causes of death of micro-organisms during transportation. (4 marks)

- ✓ Contamination
- ✓ Prolonged exposure to unfavourable conditions
- ✓

SECTION B (60 marks)

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

11. Describe sterilization by use of dry heat. (20 marks)
12. (a) Outline **four** events that take place during interphase. ^{- DNA replicated} (4 marks)
- (b) Differentiate between each of the following:
- (i) prophase of mitosis and meiosis I; (6 marks)
- (ii) anaphase of mitosis and meiosis I. (6 marks)
- (c) Explain the significance of mitosis. ^{Regeneration, Growth, Stability, Repair} (10 marks)
13. (a) Explain the role of bacterial capsule. (6 marks)
- (b) Outline the economic importance of Monera. (14 marks)
14. (a) Explain the classification of bacteria based on oxygen requirement. (12 marks)
- (b) Highlight **eight** distinguishing features of algae. (8 marks)
15. Describe the general characteristics of the divisions of fungi. (20 marks)

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