

Name: _____ Index No: _____/_____

1412/311
IMMUNOLOGY AND MEDICAL
MICROBIOLOGY
June/July 2013
Time: 3 hours

Candidate's Signature: _____

Date: _____



THE KENYA NATIONAL EXAMINATIONS COUNCIL

CRAFT CERTIFICATE IN MEDICAL LABORATORY TECHNOLOGY

IMMUNOLOGY AND MEDICAL MICROBIOLOGY

3 hours

INSTRUCTIONS TO CANDIDATES

Write your name and index number in the spaces provided above.
Sign and write the date of the examination in the spaces provided above.
This paper consists of TWO sections; A and B.
Answer ALL the questions in section A and any TWO questions from section B.
Each question in section A carries 4 marks, while each question in section B carries 20 marks.
Answers to All questions should be written in the spaces provided in this question paper.
Maximum marks for each part of a question are indicated.
Candidates should answer the questions in English.

For Examiner's Use Only

Section A

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total Score
Candidate's Score																

Section B

Question	16	17	18	19	Total Score
Candidate's Score					

GRAND TOTAL

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This paper consists of 12 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 (60 marks)

Answer ALL the questions in this section.

1. Distinguish between:

(a) sterilization and decontamination;

(b) bacteriocide and bacteriostat.

(4 marks)

2. (a) Name two antibiotics that inhibit bacterial cell wall synthesis.

(b) State the contribution of the following scientists to microbiology:

(i) Alexander Flemming;

(ii) Joseph Lister.

(4 marks)

3. Draw a labelled structure of a bacterial spore. (4 marks)

4. Define the following terms: (4 marks)

(a) microaerophile;

(b) psychrophile;

(c) capriophile;

(d) aerobe.

5. Compare and contrast the genus *Staphylococcus* and *Streptococcus*. (4 marks)

6. Describe the appearance of *Neisseria gonorrhoea* after Gram staining of a urethral discharge sample. (4 marks)

7. Contrast between fungi and bacteria. (4 marks)

8. Identify the viral taxonomic units that end with the following suffix. (4 marks)

- (a) _____viridae;
- (b) _____virinae;
- (c) _____virus;
- (d) _____virales.

9. Describe the physical barriers against microbial infection found in the respiratory tract. (4 marks)

10. (a) Define the term “immunosuppression.”

(b) Name **two** tertiary lymphoid organs.

(4 marks)

11. Explain the roles of the following cells in immune response:

(4 marks)

(a) eosinophils;

(b) neutrophils;

(c) monocytes;

(d) basophils.

12. State any **four** features of the secondary immune response.

(4 marks)

13. Explain the term “**actively acquired immunity**” citing **two** specific examples.

(4 marks)

14. (a) Define the term “antigen presenting cell”.

(b) Name **three** types of antigens found in bacteria.

(4 marks)

15. Outline any **four** functions of the complement system.

(4 marks)

SECTION B (40 marks)

Answer any TWO questions from this section.

16. Outline the following tests used to identify bacteria and the expected results:

(a) Venereal Disease Research Laboratory (VDRL) test; (7 marks)

(b) Oxidase test (disc method); (5 marks)

(c) Elek’s test. (8 marks)

17. Describe:

(a) the haemolytic patterns observed when bacteria are cultured in blood agar: (9 marks)

(b) laboratory diagnosis of *Candida albicans*. (11 marks)

18. (a) State **five** routes used to administer vaccines. (5 marks)
 - (b) Describe the indirect ELISA test. (11 marks)
 - (c) Explain the mechanism of type II hypersensitivity. (4 marks)
19. (a) Explain the process of phagocytosis from the phagocyte encountering the antigen to the killing of the antigen. (10 marks)
 - (b) Describe the general functions of antibodies. (10 marks)
