



PROGRAM : DIPLOMA
BIOTECHNOLOGY

SUBJECT : MICROBIOLOGY 3

CODE : MCB 2AMR

DATE : SSA EXAMINATION
JUNE 2018

DURATION : (X-PAPER) 08:30 - 11:30

WEIGHT : 40 : 60

TOTAL MARKS : 180

EXAMINER : MR K MACLEAN Sanso Number

MODERATOR : N LALOO File Number

NUMBER OF PAGES : 4 PAGES

INSTRUCTIONS TO INVIGILATOR:

QUESTION PAPERS MUST BE HANDED IN.
ONE CALCULATOR PERMITTED.
NO CELL PHONE ALLOWED.

REQUIREMENTS

ONE OR TWO SCRIPTS PER CANDIDATE.

2/...

INSTRUCTIONS TO CANDIDATES:

PLEASE ANSWER ALL THE QUESTIONS.

QUESTION 1

1.1 Elaborate on the following medically important diseases with reference to the clinical manifestation, treatment, prevention and control:

- 1.1.1 Yellow fever (8)
- 1.1.2 Mononucleosis (5)
- 1.1.3 Rabies (7)
- 1.1.4 Pertussis (7)

1.2 Name two types of arthropod-borne and one sexually transmitted bacterial diseases. (3)

[30]**QUESTION 2**

- 2.1 Explain how antibiotics work according to the “How do antibiotics work” video-clip on Blackboard. (15)
- 2.2 Name two bacterial and fungal sources of antibiotics with an example of one antibiotic derived from each microorganism. (8)
- 2.3 Compare the dilution susceptibility test with the disk diffusion and Kirby- Bauer method used to evaluate antimicrobial sensitivity testing. (10)

[33]**QUESTION 3**

Compare the general description, treatment, prevention and control of the following types of fungal diseases.

- 3.1 Superficial mycoses
- 3.2 Cutaneous mycoses
- 3.3 Subcutaneous mycoses
- 3.4 Systemic mycoses
- 3.5 Opportunistic mycoses (30 x0.5) **[15]**

QUESTION 4

- 4.1 With the aid of an annotated diagram illustrate an “Epidemiological Triangle” according to the video-clip on Blackboard.
Then construct a “triangle” for Listeriosis in South Africa. (12)
- 4.2 Define epidemiological statistics and mention three important statistical measures of disease frequency. (6)
- [18]**
-

QUESTION 5

Describe warts and name the causative agent.
Also name the four types of warts and elaborate on the treatment of warts. **[10]**

QUESTION 6

- 6.1 Discuss “Legionnaires” disease. (8)
- 6.2 With an annotated diagram explain the life cycle of *Plasmodium*. Also give the name of the vector. (13)
- [21]**
-

QUESTION 7

- 7.1 Name the causative agents for the following diseases.
- 7.1.1 Shingles
- 7.1.2 German measles
- 7.1.3 Chagas disease
- 7.1.4 Whooping cough
- 7.1.5 Botulism (5)
- 7.2 Describe the clinical manifestations of septic bacterial meningitis. (7)
- 7.3 Name three mechanisms by which antibiotics affect bacteria. (3)
- [15]**
-

QUESTION 8

- 8.1 Name one example of the following major microbial products with the microorganism responsible in the manufacturing.
- 8.1.1 Industrial
 - 8.1.2 Agricultural
 - 8.1.3 Food additive
 - 8.1.4 Medical
 - 8.1.5 Biofuel (10)
- 8.2 With the aid of an illustrative diagram explain the operation of a biosensor. (8)
- [18]**
-

QUESTION 9

- 9.1 Quote five meanings of the word 'fermentation' and two ways in which microorganisms can be preserved. (10)
- 9.2 Name and briefly explain five (5) types of phytoremediation. (10)
- [20]**
-

TOTAL: 180