



AMREF INTERNATIONAL TRAINING CENTRE

Qualification Code :

Qualification : Environmental Science Level 6

Unit Code : ENV/CU/SCI/CR/05/6/A

Unit of Competency : Environmental Microbiology

WRITTEN ASSESSMENT

Time: 3 Hours

INSTRUCTIONS TO CANDIDATE

1. This paper has two sections A and B
2. You are provided with a separate answer booklet
3. Marks for each question are as indicated
4. Do not write on the question paper

This paper consists of five (3) printed pages. Candidates should check the question paper to ascertain that all the pages are printed as indicated

SECTION A: (40 MARKS)

Answer ALL the questions in this section

1. Define microbiology, microbe (4 Marks)
2. A microscope is composed of different parts and each plays a crucial role. State the functions of each of the following parts of; stage clip 2 marks, eye piece. (2 Mark)
3. Microorganisms are classified based on their different morphological characteristics. List FOUR classes of microorganisms (4 Marks)
4. A group of students wanted to study the morphological features of a bacteria in the lab. Outline the procedure they may use for culturing bacteria. (4 Marks)
5. Microorganisms play a vital role in the environment. List FOUR uses microbes in food industry production (4 Marks)
6. Doctors recommends the use of antibiotics in cases where one has bacterial infection. Name any FOUR resistance mechanism of pathogens to antibiotics. (4 Marks)
7. Before carrying out any experiment, all the apparatus must be sterilized for accuracy of results obtained. Identify any FOUR factors influencing sterilization methods used (4 Marks)
8. Differentiate between bio-degradation and bio-remediation. (4 Marks)
9. Media is prepared in the lab and left for microorganisms to grow inside. Briefly state any FOUR isolation techniques. (4 Marks)
10. Bacteria are classified based on their different characteristics. State four classes of bacteria based on their oxygen requirement. (4 Marks)

SECTION B: (60 MARKS)

Answer any THREE questions in this section.

11. Microorganisms play a vital role in the environment
 - a) Outline FOUR importance of bacteria to man (8 Marks)
 - b) Briefly explain any SIX characteristics of a bacteria (12 Marks)
12. Culturing promotes first growth of microorganisms in a lab
 - a) With an aid of a graph, explain a bacterial culture curve and the different phases. (12 marks)
 - b) Explain FOUR factors that affect bacterial growth (8 marks)
13. A group of students were assigned a practical assignment to study the growth of microorganisms in a media they had prepared in the laboratory
 - a) Outline SIX types of media that can be prepared in the laboratory (12 Marks)
 - b) Identify the FOUR components of a media (8 Marks)
14. For a sample to be seen and studied under a microscope, the sample has to be prepared for ease of viewing
 - a) Outline the steps taken in preparation of specimen for light microscopy (12 Marks)
 - b) Briefly explain FOUR different types of staining techniques (8 Marks)