



## AMREF INTERNATIONAL TRAINING CENTRE

Qualification Code : 0521 0654 B  
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 three (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. Students in a classroom were asked prepare a media culture for a biology lab session. State FOUR essential requirements of a culture media that they used  
(4 Marks)
2. Students from school Y attended their first ever lab session in the school. Highlight FOUR microscope handling rules that they need to observe when using the microscope  
(4 Marks)
3. Bacteria are classified based on diverse characteristics when studying them. Identify FOUR classes of bacteria based on their oxygen requirement  
(4 Marks)
4. You are assigned to do a biology practical and have been provided with a sample of microorganisms. Name FOUR factors that are known to control their growth.  
(4 Marks)
5. When conducting any experiment in the lab, the instruments used must be sterilized to ensure that the results obtained are accurate. State FOUR disadvantages of using dry heat sterilization method  
(4 Marks)
6. A biological laboratory is composed of many instruments and apparatus. Distinguish between a simple microscope and a compound microscope  
(4 Marks)
7. In order for a specimen to be seen clearly under a microscope, it has to be stained. Identify FOUR staining techniques used  
(4 Marks)
8. Antibiotic as a drug is meant to fight a variety of bacteria in the body system. Differentiate between a broad spectrum and a narrow spectrum antibiotic  
(4 Marks)
9. Microbes are classified based on the different characteristics that they have. Enumerate FOUR classes of microbes  
(4 Marks)
10. The presence of microorganisms in the environment is very vital. Briefly outline FOUR importance of studying environmental microbiology  
(4 Marks)

**SECTION B: (60 MARKS)**

*Answer any THREE questions in this section.*

11. Living organisms have cell. The cells are either Prokaryotic or Eukaryotic
- a) Describe FIVE differences between prokaryote and eukaryote cells (10 Marks)
  - b) Explain the five classes of flagella found in bacterial cells (10 Marks)
12. Microbiology involves the study of microorganisms and their colonies
- a) Explain four important features used in identifying bacterial colonies (8 Marks)
  - b) Highlight SIX importance of microorganisms to humans and the environment (12 Marks)
13. You are using a light microscope to identify the morphology of bacteria
- a) Describe six types of cocci bacteria you are likely to see under the microscope (12 Marks)
  - b) Describe the procedure of carrying out gram staining on air dried E coli smear (8marks)
14. You have been assigned to perform a sensitivity test for a microbiology organization in county X
- a) Explain TWO roles of sensitivity test in a laboratory (4 Marks)
  - b) Describe the steps followed to perform the sensitivity test and result (12 Marks)
  - c) Explain TWO limitations of sensitivity test (4 Marks)