



MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FIRST YEAR SUPPLEMENTARY EXAMINATION FOR
BACHELOR OF PUBLIC HEALTH

HPH 104: INTRODUCTION TO ENVIRONMENTAL MICROBIOLOGY

DATE: 16/3/2022

TIME : 2:00 – 4:00 PM

Instructions

1. Answer Question 1 (compulsory) and **any two** questions in Section B.
2. Use clean well labelled diagrams wherever appropriate.

SECTION A

QUESTION ONE

- a. Distinguish between the following terms
 - i. Ionizing radiations and non-ionizing radiations (2 marks)
 - ii. Normal microbiota and pathogens (2 marks)
- b. Describe Koch's postulates for verification of the germ theory (4 marks)
- c. List the desirable qualities of an effective germicide (3 marks)
- d. Illustrate three groupings of bacteria according to shape with examples (3 marks)
- e. Define 3 terms that are used to describe chemical control of microbes. (3 marks)
- f. Explain the mode of action of cold temperatures in microbial control. (3 marks)
- g. Outline the contribution of Edward Jenner to the history of microbiology (3 marks)
- h. Illustrate the basis of Gram staining in relation to the bacterial cell structure (4 marks)
- i. Highlight three portals of entry of pathogens into the host (3 marks)

SECTION B

QUESTION TWO (20 MARKS)

Discuss five Mechanisms of Antibiotic Drug action

QUESTION THREE (20 MARKS)

Discuss the prokaryotic cell structures that are involved in carrying out life processes of a bacterial cell.

QUESTION FOUR (20 MARKS)

Discuss microbial virulence factors that improve invasiveness and capacity to evade host defenses

QUESTION FIVE (20 MARKS)

Discuss the three categories of media with two illustrations in each case. (12 marks)

Describe with illustrations, four microbiological techniques (8 marks)