



**JARAMOGI OGINGA ODINGA UNIVERSITY OF
SCIENCE AND TECHNOLOGY
SCHOOL OF HEALTH SCIENCES**

**UNIVERSITY EXAMINATION FOR BACHELOR IN PUBLIC HEALTH &
COMMUNITY HEALTH AND DEVELOPMENT**

2ND YEAR 1ST SEMESTER 2013/2014 ACADEMIC YEAR

CENTER: BUSIA

COURSE CODE: HCD 3211
COURSE TITLE: INTRODUCTION TO MICROBIOLOGY.
EXAM VENUE: STREAM:
DATE: EXAM SESSION:

Instructions:

- 1. Answer ALL questions in Section A and ANY other 2 questions in Section B.**
- 2. Candidates are advised not to write on the question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

SECTION A: Answer all questions (30 marks)

1. Describe two domains that comprise prokaryotic organisms. Name the main diagnostic feature that is used to differentiate the two domains **(3 marks)**
2. With examples describe the main difference between differential and simple stains **(3 marks)**.
3. Define the term commercial sterilization. Name the organisms that are normally the subject of commercial sterilization in the food industry **(3 marks)**.
4. Explain the principles behind the following food preservation procedures **(3 marks)**
 - A) Osmotic pressure
 - B) Low temperatures
 - C) Desiccation.
5. Prokaryotic organisms can be classified into various distinct groups based on certain characteristics of their cells. Name at least three important morphological features that are used to classify bacteria into different groups **(3 marks)**.
6. During World Wars I and II, fermentation technology was used to manipulate microorganisms to produce armament related chemical compounds. These methods are still valid today. Name at least two chemical compounds that can be produced industrially by microbial fermentation **(3 marks)**.
7. Define the following terms as related to microbial control **(3 marks)**
 - A) Sanitization
 - B) Disinfection
 - C) Degerming
8. In microscopy sample specimens must be prepared appropriately before they can be examined by a compound light microscope, describe the functions of the following processes; **Staining, fixing, and smearing (3 marks)**.
9. Name at least three eukaryotic intracellular protozoa microorganisms that are found in the phylum Apicomplexa that are pathogenic to humans **(3 marks)**.
10. With examples list at least three beneficial functions of Algae to man **(3 marks)**

Section B: Answer any two questions (40 marks)

1. Describe the role played by microorganisms in each of the following;
 - A. Biological control of pests (**5 marks**)
 - B. Recycling of elements (**5 marks**)
 - C. Sewerage treatment (**5 marks**)
 - D. Bioremediation (**5 marks**)

2. With reference to both prokaryotic and eukaryotic cells describe the functions of the following
 - A. Ribosomes (**5 marks**)
 - B. Cell membrane (**5 marks**)
 - C. Cytoplasm (**5 marks**)
 - D. Mitochondria (**5 marks**)

3. Using the domain Bacteria as an example, discuss the general **physical** and **chemical** growth requirements of microorganisms (**20 marks**).

4. With specific examples describe the role of microorganisms in the following industrial processes:
 - A. Cheese making (**5 marks**)
 - B. Making of Alcoholic Beverages and Vinegar (**5 marks**)
 - C. Production of enzymes (**5 marks**)
 - D. Making of pharmaceutical products (**5 marks**)