

**UNIVERSITY EXAMINATION
JARAMOGI OGINGA ODINGA UNIVERSITY (BUSIA LEARNING CENTRE)**

COURSE CODE SBI 3211: INTRODUCTION TO BASIC MICROBIOLOGY

Answer ALL questions in Section A and ANY TWO questions in Section B

1. List any **three** structural features that are common to both Eukaryotic and prokaryotic cells and their basic functions. **(3 marks)**.
2. Define the term prokaryotic cell: what are the main differences between Domain Archaea and Bacteria. **(3 marks)**.
3. In respect to microbial growth physical and chemical requirements, define the following terms.
 - A) Obligate Anaerobes
 - B) Facultative halophiles
 - C) Mesophiles **(3 marks)**.
4. Define the term transport media, what are the basic requirements of a transport media **(3 marks)**.
5. Microorganism can be controlled using various methods in our environment. Define the following terms that are commonly used in reference to microbial control:
 - a) Thermal death point (TDP)
 - b) Sanitization
 - c) Degerming **(3 marks)**.
6. Fungi are Eukaryotic cells that are commonly found in our environment as either parasites, symbionts or free living organisms. Define the following terms that are commonly used in relationship to fungi:
 - a) Coenocytic hyphae
 - b) Thallus
 - c) Anamorphs **(3 marks)**
7. List at least two antibiotics that are used as food preservatives. Name one food substance that is commonly preserved using any of the above antibiotics? **(3 marks)**.
8. State three major benefits derived from Algae. **(3 marks)**.
9. List three products that are produced by microorganism using recombinant DNA technology that are beneficial to humans **(3 marks)**.
10. Define the term Glycocalyx. List at least two functions of glycocalyx to the prokaryotic cell **(3 marks)**.

SECTION 2. ANSWER ANY TWO QUESTION (40 Marks)

1. With examples compare and contrast the following principles which are commonly used in the control of microorganisms?
 - a) Sterilization and Commercial sterilization (**4 marks**)
 - b) Boiling and Pasteurization(**4 marks**)
 - c) Disinfectants and Antiseptics (**4 marks**)
 - d) Osmotic pressure and Desiccation(**4 marks**)
 - e) Filtration and Radiation (**4 marks**)

2. The rate of microbial growth and replication is controlled by availability of suitable hosts and favorable environmental factors. Describe how replication and reproduction occurs in the following microorganisms?
 - a) Bacteria (**5 marks**)
 - b) Protozoa (**5 marks**)
 - c) Fungi (**5 marks**)
 - d) Viruses (**5 marks**)

3. Microorganisms are all around us in fact life as we know it would not have been possible without them. Describe how microorganisms are exploited commercially in the following industrial processes:
 - a) Sewerage treatment(**5 marks**)
 - b) Insect pest management (**5 marks**)
 - c) Bioremediation (**5 marks**)
 - d) Food industry (**5 marks**)

4. Describe any two Protozoa microorganisms in the phylum Apicomplexa that are pathogenic to humans. Describe their mode of **transmission**, the **disease** they cause, **treatment** and method of **control (20 marks)**.