



**KISII UNIVERSITY**  
**UNIVERSITY EXAMINATIONS**

**SPECIAL EXAMINATIONS**  
**FIRST YEAR EXAMINATION FOR THE AWARD OF THE**  
**DIPLOMA IN COMMUNITY HEALTH AND DEVELOPMENT**  
**SECOND SEMESTER, 2021/2022**  
**(FEBRUARY - JUNE, 2022)**

**COMH 0122: MICROBIOLOGY**

**STREAM: Y1 S2**

**TIME: 2 HOURS**

**DAY:**

**DATE: 00/07/2022**

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**INSTRUCTIONS:**

- 1. Do not write anything on this question paper.***
- 2. Answer ALL the questions in section A (Compulsory) and any other THREE questions from section B.***

**SECTION A (40 MARKS)**

- Briefly describe five characteristics of fungi (5marks)
- What are bacterial endospores and what is their purpose? (2marks)
- a) What is the purpose of staining? (1mark)  
b) What are the differences between positive staining and negative staining? (2marks)
- a) What is the use of flagella in bacteria? (1mark)  
b) Briefly write notes on the types of flagellation in microbial cells (4marks)
- Name any three protozoans and the diseases they cause (3marks)
- a) Explain briefly how magnification & resolution differ? (2marks)  
b) How is total magnification determined? (1mark)
- a) What was the contribution of Robert Koch to microbiology? (1mark)

- b) What are the Koch postulates? (4marks)
- 8. Identify three types of sexual spores produced by fungi (3marks)
- 9. Describe the cellular targets of chemical and physical methods of microbial control (4marks)
- 10. How do microbes differ in their response to pH? (3marks)
- 11. a) What are the three basic shapes of bacteria? (3marks)
- b) What is the fluid mosaic model? (1mark)

SECTION B (30 MARKS)

- 12. Identification of bacteria may involve use of biochemical tests, culture or staining techniques. Write notes on the steps involved in the five I's (10marks)
- 13. Discuss the steps involved in viral multiplication and what happens in each step (10marks)
- 14. a) What are the steps of binary fission? (4marks)
- b) Differentiate between a viroid and a prion? (2marks)
- c) Outline the industrial significance of microbes (4marks)
- 15. a) Six *Staphylococcus aureus* are inoculated into a cream pie by the hands of a pastry chef. The generation time of *S. aureus* in cream pie at room temperature is 30 minutes.
  - i) How many *S. aureus* are in the pie after 4 hours? (1mark)
  - ii) After 24 hours? (1mark)
- b) Discuss the growth curve of an organism grown in a batch culture (8marks)
- 16. Briefly discuss the main uses and principle of the following light microscopes:
  - a) Bright field (2marks)
  - b) Dark-field (2marks)
  - c) Phase contrast (2marks)
  - d) Fluorescence (2marks)
  - e) Differential interference contrast (2marks)

17. Briefly discuss the different ways in which pathogens can be transmitted? (10marks)