



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY**

**SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES**

**SPECIAL EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION  
SCIENCE WITH IT**

**MAIN CAMPUS - REGULAR**

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**COURSE CODE: SBT 303**  
**COURSE TITLE: GENERAL MICROBIOLOGY**  
**EXAM VENUE: STREAM: (BED)**  
**DATE: EXAM SESSION:**  
**TIME: 2 HOURS**

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**Instructions:**

- 1. Answer ALL questions in Section A and Any two questions in Section B**
  - 2. Candidates are advised not to write on question paper**
  - 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**
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### SECTION A: SHORT ANSWER QUESTIONS (30 MARKS)

1. (a) Define the term culture medium (1 mark)  
(b) Name three special ingredients found in MacConkey's agar (3 marks)
2. (a) State the functions of each of the following structures in bacteria (2 marks)
  - (i) Pili
  - (ii) Capsule  
(b) Define the term aseptic techniques (1 mark)
3. State three genera of cocci bacteria (3 marks)
4. Explain the function of the following reagents used during gram stain procedure
  - (a) Iodine solution (1 marks)
  - (b) Chrystal violet (1 marks)
  - (c) Acetone (1 marks)
5. Distinguish between enriched and enrichment media giving relevant example in each case. (3 marks)
6. Provide three examples of sexual spores in fungi (3 marks)
7. Viruses are not organisms. Explain. (3 marks)
8. State three characteristics of bacteria
9. List three three genera in the class Mastigophora. (3 marks)
10. Highlight three significance of aseptic technique in microbiology laboratory (3 marks)

### SECTION B: ESSAY QUESTIONS (40 MARKS)

11. Explain the importance of various nutritional requirements for the growth of bacteria. (7 marks)
  - (b) Highlight the major events in each phase of bacterial growth (8 marks)
  - (b) State the two factors that contribute to the termination of log phase (2 marks)
  - (c) Describe how you would maintain bacterial cells in a log for a length of time. (2 marks)
  - (d) Sketch the curve you would expect if you transfer the bacterial from log phase into another flask containing an identical medium. (1 marks)
12. Describe the application of temperature in sterilization (20marks)
13. Describe the life cycle of a bacteriophage (20 marks)
14. (a) Draw and label the structure of bacterial cell (10 marks)
  - (b) Differentiate between prokaryotes and eukaryotes (10 marks)