

BOT 302E



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COLLEGE**

Bastion of Knowledge

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OFFICE OF THE DEPUTY PRINCIPAL
ACADEMICS, STUDENT AFFAIRS AND RESEARCH

UNIVERSITY EXAMINATIONS

2021 /2022 ACADEMIC YEAR

THIRD YEAR FIRST SEMESTER REGULAR EXAMINATION

**FOR THE DEGREE OF BACHELOR OF
EDUCATION SCIENCE**

COURSE CODE: BOT 302E

COURSE TITLE: GENERAL MICROBIOLOGY

DATE: 24TH JANUARY 2022 TIME: 09.00AM – 12.00PM

INSTRUCTIONS TO CANDIDATES

- SEE INSIDE

THIS PAPER CONSISTS OF 3 PRINTED PAGES

PLEASE TURN OVER

REGULAR – MAIN EXAM
BOT 302E: GENERAL MICROBIOLOGY

STREAM: BED (SCIENCE)

DURATION: 3 Hours

INSTRUCTIONS TO CANDIDATES

- i. Answer **ALL** questions from section A and any **FOUR** from section B.
 - ii. Diagrams should be used whenever they serve to illustrate the answer.
 - iii. Do not write on the question paper.
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SECTION A (30 MARKS)

Question One

- a) What is HACCP? (2 Marks)
- b) Outline the procedure of Gram staining technique. (4 Marks)
- c) During Log phase growth of bacterial culture, a sample was taken at 10.00a.m and found to contain 1,000 viable cells per ml. A second sample taken at 08.00p.m. was found to contain 1,000,000 viable cells per ml. What is the generation time in hours? (3 Marks)
- d) In the wake up of COVID-19 pandemic worldwide, research scientists have developed different vaccines to curb its spread. As a nation Kenya, people have been encouraged to go for vaccinations to reduce the rate of infections. Justify the vaccination program campaign using the concept of herd immunity (3 Marks)
- e) Outline three general characteristics of viruses. (3 Marks)

Question Two

- a) Describe the nutritional diversity of micro-organisms. (4 Marks)
- b) Use two examples to explain the meaning of an opportunistic pathogen. (3 Marks)
- c) Distinguish between
 - i) Foodborne intoxication and foodborne infection. (4 Marks)
 - ii) Fastidious and Non-fastidious bacteria. (4 Marks)

SECTION B (40 MARKS)

Question Three

- a) Describe how temperature affects microbial growth. (8 Marks)
b) State any two determinants of innate immunity. (2 Marks)

Question Four

- a) Define an indicator bacterium in water quality. (2 Marks)
b) For each of the following bacterial diseases, state the causative organisms, mode of transmission, part of body affected and suggest a suitable antibiotic.
i) Cholera (2 Marks)
ii) Typhoid (2 Marks)
iii) Tuberculosis (2 Marks)
iv) Syphilis (2 Marks)

Question Five

- a) Outline any two changes in cells during the stationary phase. (2 Marks)
b) Discuss the physical methods of food preservation. (8 Marks)

Question Six

- a) Give an account of the phases in a bacterial growth curve in a batch culture of growth. (7 Marks)
b). State three characteristics of specific immunity. (3 marks)

Question Seven

- a) Define the term pure culture. (2 Marks)
b) Using relevant examples, point out one application of microbiology in the:-
i. Agriculture field (2 Marks)
ii. Industrial production (2 Marks)
c) Describe two inoculation techniques used during culturing a sample on a solid medium. (4 Marks)
