

CHUKA

UNIVERSITY



UNIVERSITY EXAMINATIONS

RESITS/SPECIAL EXAMINATIONS

**FOURTH YEAR EXAMINATION FOR THE AWARD OF DEGREE OF
BACHELOR OF SCIENCE IN FOOD SCIENCE AND TECHNOLOGY**

FOST 414: FOOD BIOTECHNOLOGY

STREAMS: BSc (FOST) Y4S2

TIME: 2 HOURS

DAY/DATE: MONDAY 28/8/2023

2.30 P.M. – 4.30 P.M.

INSTRUCTIONS

- The paper contains sections A and B
- Answer all questions in section A and any TWO from section B
- Marks for each question are indicated in parenthesis ()
- Total marks = 100 %

SECTION A: – ANSWER ALL QUESTIONS. [30 MARKS]

Give short answers (5 marks each)

1. List the four bases of DNA and indicate the one missing in an RNA strand.
2. On the same x and y axis, draw a typical, labelled graph of product and starter organism concentration in a batch fermenter against time and explain their shapes.
3. Discuss the importance of hygienic handling in culture room.
4. List any three possible positive outcomes and two negative outcomes of genetic modification of organisms.
5. What is the difference between a codon and a nonsense codon
6. In conventional plant breeding, the same species but different varieties can be cross-bred. How does genetic modification differ from this common rule?

SECTION B: ANSWER ANY TWO QUESTIONS. [40 MARKS]

7.

- a) Use of GMO foods has been approved in Kenya. Discuss ways in which this biotechnology can be used ensure food and nutrition security for Kenya. (10 marks)
- b) Give practical steps you would take to minimize chances of bacteriophage attack in a dairy plant specialized in yoghurt making. (10 marks)

8.

- a) What is the difference between an air lift fermenter and a bubble column fermenter? (10 marks)
- b) Apart from food production, in which other fields has GMOs been used? Give examples (10 marks)

9.

- a) Briefly discuss the main steps used in introducing a desired gene from a donor into a DNA strand of an organism. (8 marks)
- b) Discuss any four concerns that have hindered universal GMO acceptance. (12 marks)

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