CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATIONS

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: TUESDAY 21/09/2021 **11.30 A.M. – 1.30 P.M.**

INSTRUCTIONS:

- ***The paper contains section 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 = 70***

SECTION A: (30 MARKS) – ANSWER ALL QUESTIONS

Give short answers (5 marks each)

1. What is the relationship between DNA and corresponding messager RNA (mRNA)?
2. Draw a graph of the population of microorganisms in a batch fermenter against time and explain its shape.
3. Which factors would you manipulate during growth of yeast starter to maximize either alcohol or biomass?
4. Explain why fermented food products are generally safer than their unfermented counterparts.
5. What is the relationship between genotype, phenotype and gene expression?
6. Compare and contrast crop variety improvement by traditional breeding and modern genetic modification techniques.

SECTION B: (40 MARKS) – ANSWER ANY TWO QUESTION

7. a) Discuss the importance of starter cultures in production of quality fermented products, giving appropriate examples. (12 marks)
   b) Explain practical ways that can be used to minimize bacteriophage attack on starter culture in a dairy plant. (8 marks)

8. a) In which ways can modern recombinant DNA technology be used to improve food and nutrient security in Kenya? (12 marks)
   b) Discuss factors that have hindered universal GMO acceptance. (8 marks)

9. a) Give ways that can be used to reduce food wastes using biotechnology. (10 marks)
   b) Compare and contrast continuous fermenters and batch fermenters. (10 marks)

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