

CHUKA



UNIVERSITY

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

FOST 425: APPLICATIONS OF ENZYME TECHNOLOGY IN FOODS

STREAMS: BSC FOST Y4S1

TIME: 2 HOURS

**DAY/DATE: THURSDAY 23/09/2021
P.M.**

11.30 A.M – 1.30

INSTRUCTIONS:

- Answer ALL questions in section A and any other two questions in section B.

SECTION A (30 MARKS)

QUESTION ONE

Explain the differences between the following terms as commonly used in Enzyme technology.

- (a) Mutant and hybrid (2 marks)
- (b) Genetic engineering and protein engineering (2 marks)
- (c) Gene cloning and recombinant DNA (2 marks)

QUESTION TWO

- (a) Briefly explain the importance of genetic engineering and how it can be carried during enzyme production. (4 marks)
- (b) Explain the characteristics of enzyme that facilitate their application in food. (4 marks)

QUESTION THREE

- (a) State the key differences between intracellular and extracellular enzymes. (4 marks)
- (b) Explain the role of plasmids during the production of pure enzymes. (2 marks)

QUESTION FOUR

- (a) Briefly explain reasons why we should embrace application of enzymes in food processing. (4 marks)
- (b) Explain four main methods that are available for immobilization of enzymes. (4 marks)
- (c) Why should we use molecular methods over culture methods when testing food for safety reasons? (2 marks)

SECTION B (40 MARKS)

QUESTION FIVE

- (a) Discuss the technology applications of enzymes in food industries. (12 marks)
- (b) Explain why enzymes are preferably extracted from microbes rather than plant and animal sources. (8 marks)

QUESTION SIX

- (a) Discuss the commercial production of enzymes by surface and submerged cultivation, highlighting the roles played at each stage. (12 marks)
- (b) Explain EIGHT key differences between bacteriocins and antibiotics. (8 marks)

QUESTION SEVEN

- (a) Discuss the advantages and disadvantages of using enzymes during production of various products. (12 marks)
- (b) With clear illustrations, explain the main tools that are used in genetic engineering. (8 marks)

