

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

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

FOST 425: APPLICATION OF ENZYMES IN FOOD

STREAMS: BSC (FOST)

TIME: 2 HOURS

DAY/DATE: MONDAY 29/03/2021

11.30 A.M. – 1.30 P.M.

INSTRUCTIONS:

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

SECTION A (30 MARKS)

1. Explain why food industries outsource their enzymes from microorganisms rather than plant/ animal sources for their production?
(5 marks)
2. (a) Outline the concept of active site and energetic s of ES complex formation.
(5 marks)
(b) As a food technologist in the brewing company, the production manager has consulted you to give a directive as to why the factory should adopt genetically modified enzymes from the yeast. Just your reasons.
(2 marks)
3. (a) Describe 4 differences between intracellular and extracellular enzymes. State two examples in each category.
(5 marks)
(b) Explain the advantages and disadvantages of enzymes immobilization.
(6 marks)
4. (a) Protein engineering and enzyme engineering are synonymous. Justify this statement.
(4 marks)

- (b) Explain the differences between enzymes and chemical catalysts? (3 marks)

SECTION B (40 MARKS)

5. (a) Discuss the industrial application of enzymes and state specific examples. (14 marks)
- (b) Explain the merits and demerits of submerged fermentation. (6 marks)
6. (a) Discuss the following
- (i) Multienzyme immobilization methods. (10 marks)
- (ii) Non-competitive and uncompetitive inhibitors. (6 marks)
- (b) Explain the differences between denaturation and renaturation of enzyme? (4 marks)
7. (a) Discuss the production of pure enzyme using solid state fermentation process. (12 marks)
- (b) One of the properties of enzymes that makes them so important as diagnostic and research tools is the specificity, they exhibit relative to the reactions they catalyze. A few enzymes exhibit absolute specificity, that is, they will catalyze only one particular reaction. Other enzymes will be specific for a particular type of chemical bond or functional group. Discuss the four distinct types of specificity. (8 marks)
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