

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

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

FOST 414: FOOD BIOTECHNOLOGY

STREAMS: BSC (FOST) (Y4S2)

TIME: 2 HOURS

DAY/DATE: THURSDAY 06/04/2020

2.30 P.M. – 4.30 P.M.

**INSTRUCTIONS:** Answer ALL questions in section A and any TWO questions in section B

SECTION A – ANSWER ALL QUESTIONS

1. (a) Explain the term food biotechnology? [2 marks]  
(b) Describe 5 types and 5 disciplines of biotechnology [5 marks]
2. Explain how the history of biotechnology demonstrate its advancements over the years [5 marks]
3. Differentiate the following terms as used in biotechnology [5 marks]
  - (a) BLAST and blotting
  - (b) Gel electrophoresis and DNA endonuclease
  - (c) PCR and Deoxynucleoside triphosphate (dNTP)
  - (d) Classical mutagenesis and genetic characterization
4. (a) Define Genetically Modified foods (GM)? [2 marks]  
(b) Explain the role of Taq polymerase in DNA splicing [3 marks]
5. (a) Explain how biotechnology has contributed to Enzyme production?  
(b) Explain the application of the following starter cultures in food production [3 marks]
  - (i) Lactic acid bacteria
  - (ii) Yeast
  - (iii) Mould

**SECTION B: ANSWER ANY TWO QUESTIONS**

6. (a) Describe fermentation in food biotechnology [2 marks]
- (b) By use of a flow diagram, give a comparison of traditional and industrial methods of wine and brandy production [10 marks]
- (c) Explain the significance of traditional fermented foods [8 marks]
7. (a) Explain the role of biotechnology in food production [10 marks]
- (b) Explain the safety of food produced through biotechnology processes [4 marks]
- (c) Describe the reagents needed to run a PCR [6 marks]
8. (a) Explain the risks and benefits of biotechnology in food production [10 marks]
- (b) Discuss the following biotechnology foods giving examples [10 marks]
- (i) Biotechnology (BT) Soybean
  - (ii) Biotechnology (BT) maize
  - (iii) Biotechnology (BT) potato
  - (iv) Biotechnology (BT) Canola
  - (v) Biotechnology (BT) Cotton
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