NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF APPLIED SCIENCE

DEPARTMENT OF APPLIED BIOLOGY AND BIOCHEMISTRY

BACHELOR OF SCIENCE (HONOURS) DEGREE IN APPLIED BIOLOGY AND BIOCHEMISTRY

FOOD TECHNOLOGY I (SBB4106)

Special Examination Paper

AUGUST 2024

This examination paper consists of 2 pages

Time Allowed	:	3 hours
Total Marks	:	100
Special Requirements	:	None.
Examiner's Name	:	DR H. NYATI

INSTRUCTIONS

1. Answer **Four (4)** questions. Each question carries 25 marks.
2. Where a question contains subdivisions, the mark value for each subdivision is given in brackets.
3. Illustrate your answer where appropriate with large, clearly labelled diagrams

MARK ALLOCATION

QUESTION	MARKS
1.	**25**
2.	**25**
3.	**25**
4.	**25**
5.	**25**
6.	**25**
TOTAL	**100**

1. (a) Give a comparative account of the various thermal processing technologies that may be utilized for shelf-life extension in the dairy industry. (15 marks)

(b) Explain the basis for the application of the resazurin and phosphatase tests as quality control procedures in dairy processing. (10 marks)

2. (a) Describe the methods that may be employed for 'exhausting', and comment on the significance of this operation in the canning process. (7 marks)

(b) Give an account of the causes and types of spoilage encountered in canned foods. (15 marks)

(c) Briefly comment on the significance of *Clostridium botulinum* in the canning industry. (3 marks)

3. (a) Describe the processes involved in the conversion of oils to fats. (10 marks)

(b) Explain how product quality and identity may be determined in the oils and fats industry. (15 marks)

4. Compare and contrast the various freezing methodologies currently applied in the food industry, and outline the factors determining freezing rates in processing operations.

5. (a) Describe the events that lead to the development of 'PSE' and 'DFD' conditions and comment on the subsequent effects on the quality of meat products. (15 marks)

(b) Give a brief overview of the curing process and its role in the processing of meats. (10 marks)

6 (a) Outline briefly, the function of each of the listed components in the milling process;

(i) plan sifter, (3 marks)

(ii) disc separator, (3 marks)

(iii) break rolls and (4 marks)

(iv) reduction rolls. (4 marks)

(b) Differentiate between 'strong' and 'weak' flours with particular emphasis on composition and utilization. (8 marks)

(c) A factory produces 7 000kg of flour and 3 000 kg of non-flour material per day. Calculate the extraction rate and comment on the value obtained. (3 marks)

END OF EXAMINATION