



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF APPLIED SCIENCES
DEPARTMENT OF APPLIED BIOLOGY AND BIOCHEMISTRY

BACHELOR OF SCIENCE HONOURS DEGREE IN APPLIED
BIOLOGY AND BIOCHEMISTRY

PRINCIPLES OF FERMENTATION TECHNOLOGY SBB 2109

EXAMINATION PAPER
DECEMBER 2017

This examination paper consists of 2 pages

Time Allowed: 3 hours
Total Marks: 100
Special Requirements: None

INSTRUCTIONS TO CANDIDATES

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.

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- 1.(a) With the aid of a diagram describe the steps involved in a generalized fermentation process. (15 marks)
- (b) Comment on the factors that affect the final choice of individual raw materials when formulating media for industrial fermentations. (10 marks)
- 2.(a) Explain the growth pattern of microbes in a batch reactor. (20 marks)
- (b) Derive the equation for growth of microbes during the log phase. (5 marks)
3. Explain the process for isolation of industrially important microorganisms.
- 4.(a) Describe the parameters which are normally measured to check the progress of a fermentation process. (10 marks)
- (b) Identify the key components of brewery liquid effluent and their potential impact on the environment. (5 marks)
- (c) Explain the principal features of aerobic and anaerobic bioreactors. (10 marks)
- 5.(a) Describe the working principle of a rotary vacuum filter. (10 marks)
- (b) Explain the different methods of cell disruption used in downstream processing. (15 marks)
6. Give an account of the various techniques of sterilization used in industrial production processes.

END OF EXAMINATION PAPER

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