



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF APPLIED SCIENCE
DEPARTMENT OF APPLIED BIOLOGY AND BIOCHEMISTRY
BACHELOR OF SCIENCE HONOURS DEGREE IN BIOTECHNOLOGY
INTRODUCTION TO BIOTECHNOLOGY (SBT1201)

Main Examination Paper

MARCH 2025

This examination paper consists of 2 pages

Time Allowed : 3 hours
Total Marks : 100
Special Requirements : NONE
Examiner's Name : MISS T. B. MGUNI

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) Explain the roles of three types of RNA involved in protein synthesis. (10 marks)
- (b) Describe three alternate forms of DNA. (15 marks)
2. Describe four types of fermentation, highlighting the micro-organisms involved in each type.
3. Discuss the various applications of biotechnology classified by colour, specifically focusing on red, green, white, yellow, and blue biotechnology. For each category, provide two examples of its application in real-world scenarios.
4. Explain the Central Dogma of Molecular Genetics, detailing the processes of DNA replication and transcription.
5. Describe any three different types of vectors used in gene cloning. For each, include their advantages, disadvantages, and specific applications.
6. Outline the following steps involved in DNA cloning, including:
- (a) Isolation of the target gene (6 marks)
- (b) Insertion of the gene into a vector (6 marks)
- (c) Transformation of host cells (6 marks)
- (d) Screening for successful clones (7 marks)

END OF EXAMINATION