



**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**  
**CELL BIOLOGY (SBB1103)**

**Main Examination Paper**

**DECEMBER 2024**

This examination paper consists of 2 pages

Time Allowed : 3 hours  
Total Marks : 100  
Special Requirements : NONE  
Examiner's Name : MS. J CHANGE

**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**

<b>QUESTION</b>	<b>MARKS</b>
1.	<b>25</b>
2.	<b>25</b>
3.	<b>25</b>
4.	<b>25</b>
5.	<b>25</b>
6.	<b>25</b>
<b>TOTAL</b>	<b>100</b>

1. (a) Giving examples, compare facilitated diffusion and active transport. (15 marks)  
(b) Outline the mechanism of phagocytosis by granular leucocytes. (10 marks)
2. (a) Write short notes on the following cell surface receptors:  
(i) Enzyme-linked. (7 marks)  
(ii) Ion channel-linked. (5 marks)  
(iii) G-protein-linked. (9 marks)
- (b) Briefly describe the events associated with autocrine signaling. (4 marks)
3. (a) State the fundamental principles of the cell theory and how they contribute to our understanding of biology. (5 marks)  
(b) Describe the process of mitosis. (20 marks)
4. (a) Briefly describe the basic principles of the following microscopes:  
(i) Polarisation microscope (5 marks)  
(ii) Phase contrast microscope (5 marks)  
(iii) Dark field microscope (5 marks)  
(iv) Transmission electron microscope (5 marks)
- (b) Explain the importance of studying the ultrastructure of the cell. (5 marks)
5. Give an account of the structure and function the plasma membrane.
6. Describe the structure and function of the following organelles:  
(a) Rough endoplasmic reticulum (13 marks)  
(b) Golgi apparatus (12 marks)

**END OF EXAMINATION**