



UNIVERSITY EXAMINATIONS

**FIRST YEAR EXAMINATION FOR THE AWARD OF THE DEGREE OF
BACHELOR OF SCIENCE BIOLOGY, EDUCATION, ENVIRONMENTAL
SECOND SEMESTER 2022/2023
[JANUARY-APRIL, 2023]**

BIOC 123: BIOMEMBRANES

STREAM: Y1S2

TIME: 2 HOURS

DAY: THURSDAY, 9:00 – 11:00 AM

DATE: 30/03/2023

INSTRUCTIONS

- 1. Do not write anything on this question paper.**
- 2. Answer question ONE and any other TWO questions in Section B.**

SECTION A (40 MARKS)

ALL QUESTIONS ARE COMPULSORY

- | | | |
|----------|--|----------------|
| a | Draw a diagram to show the structure of a biomembranes. | 5 marks |
| b | Describe the process of active transport. | 5 marks |
| c | Using a diagram, clearly outline the structure of micelles | 3 marks |
| d | Outline the difference between the types of proteins found in the biological membrane | 3 marks |
| e | Briefly describe the amphipathic nature of lipids | 3 marks |
| f | Differentiate the three types of coupled active transport processes | 6 marks |
| e | With the help of a simple diagram, briefly describe the fluid mosaic model of the biomembranes | 5 marks |
| f | Discuss how lipid composition influence the changes in charge on plasma membrane leading to phagocytosis | 3 marks |
| g | Differentiate between carrier proteins and channels as used in passive transport | 4 marks |

SECTION B

CHOOSE ANY TWO QUESTIONS

QUESTION TWO

- a** Describe the functions of the biological membrane **7 marks**
- b** Explain how the structure and properties of phospholipids help to maintain the structure of cell membranes **8 marks**

QUESTION THREE

- a** Discuss the role of biological membranes in cellular metabolism **5 marks**
- b** Describe the three ways in which substances move passively across membranes **10 marks**

QUESTION FOUR

- a** Elaborate the molecular mechanism of signal transduction in biological membranes **8 marks**
- b** Describe the functions of the biological membranes **7 marks**