

## UNIVERSITY EXAMINATIONS

**FIRST SEMESTER 2025/2026 ACADEMIC YEAR**

**SECOND YEAR EXAMINATION FOR THE DEGREES OF  
BACHELOR OF EDUCATION (SCIENCE), BACHELOR OF  
SCIENCE (GENERAL) AND AGED**

**ZOO/ZOOL 212: CELL BIOLOGY**

***STREAM: R***

***TIME: 2 HRS***

***DAY: FRIDAY [11.30 – 1.30 P.M]***

***DATE: 30/01/2026***

**THIS QUESTION PAPER CONSISTS OF THREE (3) PAGES**

**PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.**

**SECTION A (40 MARKS)**

**QUESTION ONE**

- a) Explain the tenets of cell theory (5 Marks)
- b) Outline the importance of cellular compartmentalization (5 Marks)

**QUESTION TWO**

Distinguish the functional differences between peroxisomes and lysosomes (5 Marks)

**QUESTION THREE**

- a) State and explain the **two** types of cells (2 Marks)
- b) Highlight the essential features common in all cells (3 Marks)

**QUESTION FOUR**

- a) Explain how endocytosis and exocytosis facilitate the movement of macromolecules across the cell membrane. (2 Marks)
- b) Distinguish between diffusion and osmosis as applied in the transport of molecules across the cell membrane. (3 Marks)

**QUESTION FIVE**

- a) State the function of the cell junctions (2 Marks)
- b) Explain functions of tight junctions (3 Marks)

**QUESTION SIX**

Briefly explain main types of epithelia based on their permeability properties. (5 Marks)

**QUESTION SEVEN**

Explain the importance of S and M phase in the cell cycle. (5 Marks)

**SECTION B 30 MARKS.**

**ANSWER TWO QUESTIONS ONLY**

**QUESTION EIGHT**

Describe cellular organelles of a human cell (15 Marks)

**QUESTION NINE**

Discuss the fluid mosaic model of the cell membrane structure and function (15 Marks)

**QUESTION TEN**

Write an essay on passive and active transport of molecules across the cell membrane (15 Marks)