



FreeExams.co.ke

**UNIVERSITY EXAMINATIONS
2023/2024 ACADEMIC YEAR**

**SECOND/ THIRD YEAR FIRST SEMESTER
MAIN EXAMINATIONS**

**FOR THE DEGREE OF BACHELOR OF SCIENCE IN
AGRICULTURAL EDUCATION AND EXTENSION// BACHELOR OF
EDUCATION SCIENCE**

COURSE CODE: SZL 211/ SBL 311

COURSE TITLE: FUNDAMENTALS OF CELL BIOLOGY/
CELL BIOLOGY

DATE: 14TH DECEMBER

TIME: 2.00 - 4.00 PM

Answer Question one (1) and any other two (2) Questions. Question one carries 30 marks; the other Questions carry 20 marks each.

TIME: 2 Hours

QUESTION ONE

- a) Describe the structural composition of the cell membrane. (5 Marks)
- b) Draw a well labelled diagram of a eukaryotic cell using an animal cell as an example. (4 Marks)
- c) Distinguish between nucleoid and nucleus in the cell. (2 Marks)
- d) Briefly describe the events that occur during metaphase of mitosis of a plant cell. (4 Marks)
- e) State the significance of mitosis in living organisms. (4 Marks)
- f) Outline four main features of cell theory. (4 Marks)
- g) State four functions of the bacterial cell wall. (4 Marks)
- h) Explain three factors that affect the rate of diffusion. (3 Marks)

QUESTION TWO

- a) Describe four types of cell junctions. (12 Marks)
- b) Define the term synapsis. (2 Marks)
- c) Describe the components of a cytoskeleton. (6 Marks)

QUESTION THREE

- a) Outline the events that occur during the cell cycle. (8 Marks)
- b) Write short notes on the following:- (4 Marks)
- i. Koch's postulates (4 Marks)
 - ii. Nucleic acid (4 Marks)
 - iii. Proteins (4 Marks)

QUESTION FOUR

- a) Account for what occurs to a red blood cell when placed in hypotonic, hypertonic and isotonic solutions. (10 Marks)
- b) i). What is the meaning of apoptosis. (2 Marks)
- ii). Describe the four types of cell death. (8 Marks)