

Uganda Martyrs University



FACULTY OF EDUCATION
SEMESTER TWO EXAMINATIONS 2023/2024
BACHELOR OF EDUCATION (PRIMARY) YEAR ONE
BIOLOGICAL SCIENCE

PAPER ONE: CELL BIOLOGY

Wed 22/05/2024

9:30 am-12:30 pm

Instructions:

- Follow instructions on this question paper and answer booklet carefully.
- Do not write anything on this question paper.
- Question One (Section A) is compulsory; choose three questions from Section B, totalling to four questions.
- This paper will not assess standard academic writing but grammatically correct English is expected.
- Use relevant illustration, where necessary in Section B.
- Each question carries a total of 25 marks

SECTION A: COMPULSORY QUESTION (25 marks)

Write a maximum of ONE sentence for each of the responses in Question 1.

Do not re-write or rephrase the questions. Write the short answers straight away.

1. a) What is:

- i. pinocytosis,
- ii. exocytosis,
- iii. endocytosis?

(6 marks)

b) Differentiate between binary fission and multiple fission. (4 marks)

c) In relation to movement of materials in and out of cells, what is meant by;

- i. solute potential,
- ii. pressure potential,
- iii. water potential?

(6 marks)

d) Make illustrations for the following without labelling them: (6 marks)

- i. Homologous chromosomes
- ii. Plasmolysed cell
- iii. DNA double helix

c) Copy down and match the following:

Column 1

- A. Cristae
- B. Cisternae
- C. Thylakoids

Column 2

- 1. Flat membranous sacs in stroma
- 2. Infoldings in mitochondria
- 3. Disc-shaped sacs in Golgi apparatus

(3 marks)

SECTION B: Attempt any THREE Questions (25 marks each)

- Begin each selected SECTION B question on a new page in the answer booklet.
- Use illustrations as much as possible for questions in this section.

2. (a) Describe the cell theory. (13 marks)
(b) Discuss the relevance of the cell theory. (12 marks)
3. (a) Describe the second meiotic division. (15 marks)
(b) How is meiosis II similar to mitosis? (10 marks)
4. (a) How does the electron microscope influence our ideas on the structure of cells?
(5 marks)
(b) Draw and label the structure of a plant cell as seen under;
i. the light microscope, (5 marks)
ii. electron microscope. (10 marks)
(c) Identify the parts of a plant cell that are not visible in a light microscope but visible under an electron microscope. (5 marks)
5. (a) Explain the meaning of (i) codon (ii) anticodon (5 marks)
(b) Describe the role of ribosomes as sites for protein synthesis. (20 marks)
6. (a) Identify the materials that move in and out of cells. (5 marks)
(b) Describe a process that requires energy for movement of materials in and out of cells. (14 marks)
(c) Explain any two reasons why substances must cross the cell membrane. (6 marks)

END