

UGANDA MARTYRS UNIVERSITY

FACULTY OF SCIENCE

DEPARTMENT OF NATURAL SCIENCES

END OF SEMESTER I EXAM

2023/2024

CELL AND MOLECULAR BIOLOGY

DATE: 13/12/2023

TIME: 9:30am-12:30pm

DURATION: 3HRS

Instructions:

- 1. Carefully read through ALL the questions before attempting*
- 2. Answer all questions in section A and 3 questions from B*
- 3. No names should be written anywhere on the examination booklet.*
- 4. Ensure that your Registration number is indicated on all pages of the examination answer booklet.*
- 5. Ensure your work is clear and readable. Untidy work shall be penalized*
- 6. Any type of examination Malpractice will lead to automatic disqualification*

SECTION A (Attempt ALL questions)

1. a) Briefly discuss the contributions made by the following early cytologists.
i. Robert Hooke
ii. Theodore Schwann
iii. Rudolph Virchow
3 marks each
- b) Briefly discuss the cell theory. 4 marks
2. a) Define the term microscopy 2 marks
b) Outline the different types of microscopes 5 marks
c) Define the term magnification. 2 marks
3. a) Briefly discuss the main two cell categories. 4 marks
b) Compare and contrast between cell organelle and cell inclusion. 4 marks
4. a) Give a brief comparison between ;
i. Eukaryotic and Prokaryotic cell 4 marks
ii. Animal and plant cell 4 marks
b) The nucleus is the command center of the cell usually near its center. Briefly discuss. 5 marks
c) Give a generalized anatomical description of the nucleus of the cell 5 marks
5. Write short notes about the following cell organelles
a) Endoplasmic reticulum
b) Golgi apparatus
c) Lysosomes
d) Mitochondria
4 marks each

SECTION B (Attempt three questions)

6. Discuss the structure and functioning of the cytoskeleton. **20 marks**
7. Discuss the following cell mechanisms:
- a) Transcription **10 marks**
 - b) Translation **10 marks**
8. a) Discuss the ultra-structure and related anatomy of the eukaryotic cell membrane. **10 marks**
- b) Discuss the functioning of the cell membrane. **10 marks**
9. a) Discuss the Cell cycle . **8 marks**
- b) Discuss the following
- i. Mitosis **6 marks**
 - ii. Meiosis **6 marks**
10. Using the necessary illustrations discuss the following macro molecules.
- a) DNA
 - b) RNA
 - c) Amino acids
 - d) Proteins
- 5 marks each**

END