

UGANDA MARTYRS UNIVERSITY
NKOZI
UNIVERSITY EXAMINATION
FACULTY OF EDUCATION

SEMESTER I, 2023/ 2024

EXAMINATION FOR HIGHER EDUCATION CERTIFICATE

CELL BIOLOGY AND MOLECULAR GENETICS

DATE: 12/12/2023
TIME: 9:30am-12:30pm
DURATION: 3HRS

Instructions:

1. *Carefully read through ALL the questions before attempting*
2. *Answer 3 questions in section A plus 2 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 3 Questions)

- 1) a. Write brief notes about the cell theory 3 marks
b. The nucleus of a cell is the conductor of all cell activities. Briefly discuss. 3 marks
c. Write briefly about the following;
i. Mitochondria
ii. Magnetosome 2 marks each
iii. Lysosome
- 2) a. Outline Mendel's first and second laws. 4 marks
b. Briefly discuss the reasons why Gregor Mendel used the pea plant while carrying out his experiments. 4 marks
- 3) Write short notes about the following;
a. Complete dominance 3 marks
b. Incomplete dominance 3 marks
c. Multiple alleles 3 marks
- 4) Outline the monomers of the following macromolecules;
a. DNA
b. Lipids
c. Sucrose 2 marks each
d. Maltose
e. Cellulose
- 5) Write short notes about the following sub-themes in protein synthesis;
a. Transcription 4 marks
b. Translation 4 marks
- 6) Outline the roles played by the following during protein synthesis;
a. mRNA
b. tRNA 4 marks each
c. rRNA
- 7) a. Define the term evolution 2 marks
b. Briefly discuss the different evidences of evolution 5 marks

- 8) Write short notes about the following;
- a. Binomial nomenclature 3 marks
 - b. Taxonomy 3 marks
- 9) A. Outline the general characteristics of monerans 5 marks
b. Outline the economic importance of the following;
i. Fungi 4 marks
ii. Monerans 4 marks
- 10) Write short notes about the following cell organelles;
- a. Nucleus
 - b. Mitochondria
 - c. Chloroplast
 - d. Magnetosome 4 marks each

SECTION B (Attempt 2 Questions)

- 11) a. Discuss the induced fit mechanism of enzyme action 10 marks
b. Discuss the factors that affect enzyme action 10 marks
- 12) Give a detailed analysis about chemical bonding. 20 marks
- 13) Discuss the properties and functioning of the following macromolecules;
- a. Nucleic acids
 - b. Proteins 5 marks each
 - c. Carbohydrates
 - d. Lipids
- 14) Discuss the different types of genetic disorders in man. 20 marks

END