

# UNIVERSITY OF FORT HARE

**MIC212**

Degree Examination

**June/July 2023**

Time: **2.5 hours**

Subject: **Microbiology**

Paper: **Mendelian Genetics and Chromosomal inheritance**

Marks: **100**

This paper consists of 4 pages including the cover page

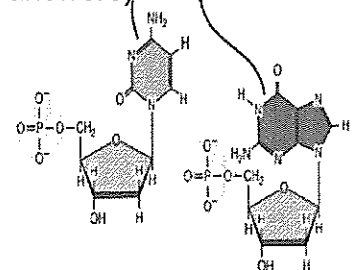
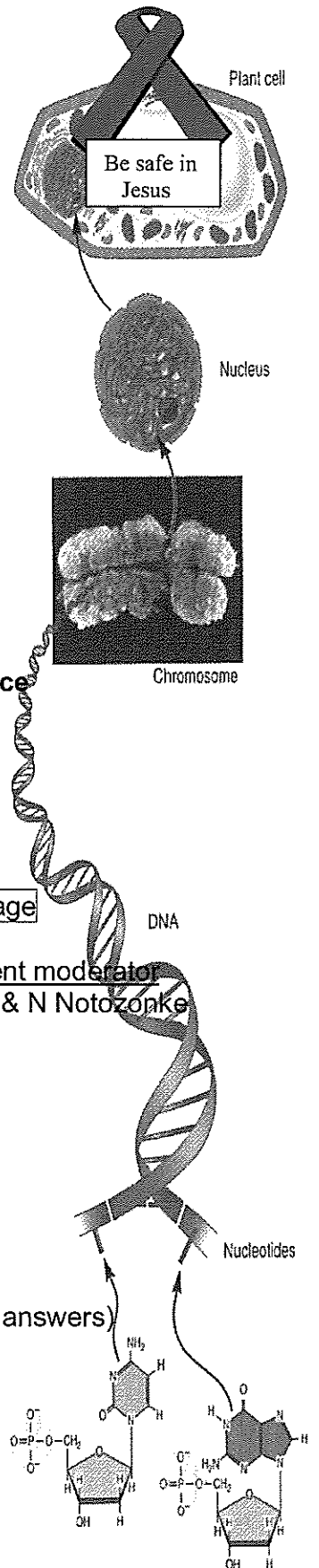
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## Instructions

Answer all questions

(Use of diagrams or drawing will enhance the value of your answers)



*“...those who hope upon the Lord will renew their strength. They will soar on*



Isaiah 40:31
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*wings like eagles; they will run and not grow weary, they will walk and not faint...”*

### Question 1

[25]

- 1.1. Describe the following:
  - a) Mendel's 1<sup>st</sup> Law [5]
  - b) Mendel's 2<sup>nd</sup> Law [5]
- 2.2. Describe Mendel's 1<sup>st</sup> experiment and his results [10]
- 2.3. Why is meiosis important in chromosomal inheritance? [5]

### Question 2

[25]

- 2.1. Using an example of straight and curly hair, discuss incomplete dominance of alleles [10]
- 2.2. Using the example of blood types, discuss co-dominance of alleles [10]
- 2.3. Describe X and Y genetic disorders, and explain why more males are affected than females [5]

### Question 3

[30]

- 3.1. Discuss the four major chromosomal mutations, use examples to enhance the value of your answer [20]
- 3.2. The South African athletics board of runners is not sure if Caster Semanya is a “She” or a “He”, you have been approached to give four valid proofs if indeed Caster is a “she”. Explain what you are going to do to prove that Caster is a “She”.



[10]

### Question 4

[20]

Giving examples, explain the meaning of following genetics terms

- 4.1 Genome
- 4.2 Karyotyping
- 4.3 Jacob's syndrome
- 4.4 Linkage group
- 4.5 Pedigree Chart

...Maranatha...