

**BINDURA UNIVERSITY OF SCIENCE EDUCATION**  
**FACULTY OF AGRICULTURE AND ENVIRONMENTAL SCIENCE**

AGC 121

**Department of Crop Science**  
**BSc Agricultural Science (Honours) Part I Examination**  
**Molecular Biology**

**3 HOURS (100 Marks)**

**INSTRUCTIONS**



**MAR 2023**

Answer any **FOUR** questions. Each question carries **25 marks**.

1. (a) Define the following terms:

i. Gene	[2 marks]
ii. Phenotype	[2 marks]
iii. Genome	[2 marks]
- (b) Highlight the importance of meiosis. [9 marks]
- (c) Describe any five ways through which the DNA can be damaged. [10 marks]
2. Discuss the impacts of biotechnology in Zimbabwe and globally? [25 marks]
3. (a) Discuss the three checkpoints critical for cell cycle regulation. [15 marks]
- (b) Highlight the differences between DNA and RNA. [10 marks]
4. With an aid of a diagram, describe the central dogma of molecular biology. [25 marks]
5. (a) What is a nucleic acid? [3 marks]
- (b) Outline the different enzymes or proteins involved in DNA replication. [16 marks]
- (c) Describe the secondary structure of proteins. [6 marks]
6. (a) Describe the three major types of RNA found in living cells. [12 marks]
- (b) Outline the components of a structural gene. [8 marks]
- (c) Why is the study of DNA replication so important in science? [5 marks]

**End of Exam Paper**