Student Name: _____	**Class:** _____
Student ID: _____	**Date:** {{DATE}}

Assessment Details

Duration: 45 minutes	**Total Marks:** 100
Topics Covered:	• Structure and Function of DNA • Central Dogma • DNA Replication and Transcription • Importance of DNA in Genetics and Biotechnology

Instructions to Students:

1. Read all questions carefully before attempting.
2. Show all working out - marks are awarded for method.
3. Calculator use is permitted except where stated otherwise.
4. Write your answers in the spaces provided.
5. If you need more space, use the additional pages at the end.
6. Time management is crucial - allocate approximately 1 minute per mark.

Section A: Multiple Choice [30 marks]

Question 1 **[2 marks]**

What is the primary function of DNA in cells?

A) To store genetic information

B) To synthesize proteins

C) To regulate cell growth

D) To respond to stimuli

Question 2 **[2 marks]**

Which of the following is a key feature of the central dogma?

A) DNA is transcribed into RNA, which is then translated into protein

B) DNA is translated into protein directly

C) RNA is transcribed into DNA

D) Protein is synthesized from RNA without DNA

Section B: Short Answer Questions [40 marks]

Question 3 **[8 marks]**

Describe the structure of DNA, including the sugar-phosphate backbone and nitrogenous bases.

Question 4 **[8 marks]**

Explain the process of transcription, including the role of RNA polymerase and the synthesis of mRNA.

Section C: Essay Question [30 marks]

Question 5 **[30 marks]**

Choose one of the following essay questions and answer it in complete sentences:

a) Discuss the importance of DNA in genetics and biotechnology, providing examples of how DNA is used in these fields.

b) Describe the central dogma, including the flow of genetic information from DNA to RNA to protein. Explain the significance of the central dogma in understanding genetic inheritance and expression.

Additional Space for Answers

Glossary of Key Terms

DNA: Deoxyribonucleic acid, the molecule that contains the genetic instructions used in the development and function of all living organisms

Central Dogma: The process by which genetic information is passed from DNA to RNA to proteins

Transcription: The process by which the information in a strand of DNA is copied into a molecule of RNA

Replication: The process by which a cell makes an exact copy of its DNA before cell division

Helicase: An enzyme that unwinds the double helix during DNA replication

Assessment Rubric

Multiple Choice Questions: 30 points

Short Answer Questions: 40 points

Essay Question: 30 points

Total: 100 points