

GWANDA STATE UNIVERSITY



FACULTY OF NATURAL RESOURCES MANAGEMENT AND AGRICULTURE

DEPARTMENT OF ANIMAL PRODUCTION AND HEALTH

INTRODUCTION TO BIOCHEMISTRY

NAP 1101

End of Semester Final Examination Paper

May/June 2023

This examination paper consists of **three** printed pages

Time Allowed: 3 hours
Total Marks: 100
Special Requirements: None
Examiner's Name: Mr R. Ndlovu

INSTRUCTIONS TO CANDIDATES

1. Answer **ALL** questions in Section A
2. Answer **ONLY TWO** questions in Section B

MARK ALLOCATION

QUESTION	MARKS
SECTION A	60
SECTION B	40
TOTAL ATTAINABLE MARKS	100

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SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

Question 1

- a) Distinguish between nucleotide and nucleoside in terms of their chemical composition. (3)
- b) Give two examples of nucleosides and their corresponding nucleotides. (4)
- c) One of the roles of nucleotides is intracellular signaling. Give two examples of nucleotides involved in signaling. (2)
- d) The base is added at the 1' position and the phosphates are added at the 5' position. Illustrate this statement using the sugar ring. (3)
- e) Discuss the applications of biotechnology under the following headings;
- i. Economic factors (4)
 - ii. Trained personnel (4)

Question 2

- a) State the components of the following disaccharides;
- i. Sucrose (1)
 - ii. Lactose (1)
- b) Discuss the functions of oligosaccharides on proteins. (8)
- c) Describe the structural and functional differences between starch and cellulose. (10)

Question 3

- a) Define the following terms and give examples;
- i. Coenzyme (2)
 - ii. Apoenzyme (2)
 - iii. Holoenzyme (2)
 - iv. Cofactor (2)
 - v. prosthetic group (2)
- b) How does absolute enzyme specificity differ from relative enzyme specificity? (10)

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SECTION B: ANSWER ONLY TWO QUESTIONS IN THIS SECTION

Question 4

- a) Give a detailed outline of what happens during the Krebs cycle in metabolism. **(12)**
- b) Describe the electron transport chain and its role in metabolism. **(8)**

Question 5

- a) Give an account of biological roles of proteins. **(8)**
- b) The Kjeldahl method is one of the methods used to quantify protein content in a food sample. Describe the three stages of the method and also state the limitation(s) of the method. **(12)**

Question 6

The structure of cell membrane is suited for its function. Discuss. **(20)**

END OF QUESTION PAPER