WOMEN'S UNIVERSITY IN AFRICA

Addressing gender disparity and fostering equity in University Education

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FACULTY OF AGRICULTURAL SCIENCES

BSc. Hons in ANIMAL SCIENCE

MAIN PAPER

MSc: AS114 Agricultural Biochemistry

INTAKE: **SECOND YEAR FIRST SEMESTER**

DATE: **TIME: 3 HOURS**

INSTRUCTIONS TO CANDIDATES

Answer any four questions.

1. Describe the effects of the following factors on the rate of an enzyme-catalysed reaction;
   i) Temperature [6]
   ii) pH [6]
   iii) Substrate concentration [6]
   iv) Enzyme concentration [7]

2. Describe the classification of carbohydrates on the basis of the following;
   i) Number of carbon atoms [7]
   ii) Number of monomeric sugar units [6]
   iii) Position of the carbonyl group [6]
   iv) Rotation of plane polarised light [6]

3. Write short notes on the following;

   i) Ribosomal RNA [7]

   ii) Nucleotides [6]

   iii) DNA structure [6]

   iv) Transcription [6]

4. (a) Explain your understanding of the following terms;

   (i) Catabolic reactions [3]

   (ii) Anabolic reactions [3]

(b) i. State the other two names of the Phosphogluconate pathway [3]

   ii. Illustrate the importance of the Phophogluconate pathway in metabolism [16]

5. Discuss protein structure with emphasis on the forces that hold each structure together [25]

6. With the aid of a flow diagram, illustrate how pyruvate is produced from glucose. [25]

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SPECIAL PAPER

MSc: AS114 Agricultural Biochemistry

INTAKE: **SECOND YEAR FIRST SEMESTER**

DATE: **TIME: 3 HOURS**

INSTRUCTIONS TO CANDIDATES

Answer any four questions.

1. **a) Table 1:** Fill in the table appropriately by completing the empty spaces of nucleotide and nucleic acid nomenclature [15]

Base	**Nucleoside**	**Nucleotide**	**Nucleic acid**
Adenine			
Guanine			
Cytosine			
Thymine			
e.g.Uracil	**Uridine**	**Uridylate**	**RNA**

b. Show diagrammatically the structure of a nucleotide and how a phosphodiester linkage is formed between 2 nucleotides [10]

2. a. When is a "classification number" normally used in enzyme nomenclature? [4]
   b. Give an example of a "classification number" and define its components [6]
   c. Discuss how an increase in temperature in metabolic systems would lead to an increase in enzyme activity but only to a point [15]

3. Write short notes on each of the following terms giving examples where possible;

   a) The genetic code [5]

   b) Racemic mixture [5]

   c) Any two types of RNA [5]

   d) Carnitine [5]

   e) Urea cycle [5]

4. Discuss the role of lipids in biological systems [25]
5. Describe, with specific examples, the use and application of enzymes in industry [25]
6. Discuss the structure of proteins, clearly highlighting the role of the various forces in maintaining each of these [25]