



1ST SEM. 2014/2015

UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER

PROGRAMME: B. Sc. AGRON.; B.Sc. ANIMAL SCIENCE;
B.Sc. HORT. & B.Sc. FSNT II.

COURSE CODE: AS 202

TITLE OF PAPER: BIOCHEMISTRY

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ANY 4 QUESTIONS.

**THIS PAPER SHOULD NOT BE OPENED UNTIL THE CHIEF
INVIGILATOR HAS GRANTED PERMISSION.**

QUESTION 1

- a. Draw the structure of D-Mannose. (5 Marks)
- b. Identify and draw the structure of an epimer of D-Mannose. (5 Marks)
- c. Identify and draw the structure of a tautomer of D-Mannose. (5 Marks)
- d. Identify and illustrate the disaccharide produced by the epimer and tautomer identified in b and c above. (10 Marks)

QUESTION 2

Using structures to illustrate your answers, describe the differences between the following:

- a. *Cis* and *trans* fatty acids; (4 Marks)
- b. Sugar acids and sugar alcohols; (9 Marks)
- c. Nucleoside and nucleotide; (12 Marks)

QUESTION 3

Describe and illustrate the following biomolecules; also briefly state the role they play in living organisms

- a. Lignin; (8 Marks)
- b. Cynogenic glucosides; (9 Marks)
- c. Microbial exopolysaccharides; (8 Marks)

QUESTION 4

Describe and illustrate energy production from glucose catabolism in the cytosol of the eukaryotic cell.

(25 Marks)

QUESTION 5

a. Describe and illustrate the following bonds of biomolecules and also state their functions:

(i) Carbohydrate glycosidic bonds;

(5 Marks)

(ii) Protein peptide bonds;

(5 Marks)

b. **Compare and Contrast** the following:

(iii) RNA and DNA;

(6 Marks)

(iv) Saturated and unsaturated fatty acids;

(3 Marks)

(v) Reversible and irreversible enzyme inhibitor;

(6 Marks)