MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2016/2017

SECOND YEAR FIRST SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRONOMY, SOIL SCIENCE, AGRICULTUREAL EXTENSION AND EDUCATION, HORTICULTURE WITH INFORMATION TECHNOLOGY

MAIN CAMPUS

AAG 203: PLANT BIOCHEMISTRY

Date: 3rd December, 2016 Time: 8.30 - 11.30 am

INSTRUCTIONS:

- Answer ALL questions in SECTION A and any TWO questions in SECTION B.

AAG 203: PLANT BIOCHEMISTRY

Instructions: Answer ALL questions in section A and any TWO selected from section B

Duration 3 hours

Section A (Answer ALL questions)

1. Nucleic acids are polymers of nucleotides. Name the three key components that make up a nucleotide (3mks)
2. Define a buffer solution, listing down one factor that affects the buffering ability of a solution (3mks)
3. Define substrate level phosphorylation (3mks)
4. Differentiate between saturated and unsaturated fatty acids (3mks)
5. In carbohydrates, many of the larger, complex biological molecules are built by combining smaller molecules through dehydration synthesis reactions. Based on this, write a chemical equation on how maltose is formed. (3mks)
6. State three structural differences between DNA and RNA (3mks)
7. Elucidate on the composition of three plant cell wall layers (3mks)
8. Briefly explain the endosymbiotic theory that explains the origin of bacteria-like organelles (3mks)
9. Citing relevant examples, differentiate between catabolic and anabolic reactions(3mks)
10. Differentiate between amination and trans-amination in nitrogen nutrition in plants (3mks)

SECTION B: Essay questions
Answer Any **TWO**

11. Outline the functions of various components of plant cells (20mks)

12. Discuss the oxidative and non-oxidative Pentose Phosphate Pathways (Hexose Monophosphate Shunt), indicating clearly the two key functions of the pathway. (20mks)

13. Using a well labeled diagram, discuss the Nitrogen cycle (20mks)

14. Discuss the citric acid cycle (Krebs cycle) (20mks)