MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2012/2013

SECOND YEAR SECOND SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE AND BACHELOR OF EDUCATION (SCIENCE) WITH INFORMATION TECHNOLOGY (MAIN CAMPUS)

SBT 204: INTRODUCTORY BIOCHEMISTRY AND GENETICS

Date: 23rd July, 2013 *Time: 11.00 a.m. – 1.00 p.m.*

UNIVERSITY EXAMINATIONS 2012/2013

SECOND YEAR SECOND SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE (With IT), BACHELOR OF EDUCATION SCIENCE (With IT)

SBT 204: INTRODUCTORY BIOCHEMISTRY AND GENETICS.

INSTRUCTIONS: ANSWER ALL QUESTIONS IN SECTION A AND ANY TWO SELECTED FROM SECTION B

SECTION A: SHORT ANSWER QUESTIONS (30 MARKS)

1. Differentiate between an aldehyde and a ketone giving an example in each case (3 marks)

2. Define the following giving an example in each case
   (a) Reducing sugar (1.5 marks)
   (b) Glycosidic bond (1.5 marks)

3. Explain what you understand by the term allosteric control in enzyme inhibition (3 marks)

4. Differentiate XX-XX system from ZZ-ZW system as chromosomal mechanisms of sex determination (3 marks)

5. Briefly explain the electrical charge effect as a property of colloids (3 marks)

6. State three commercial application of enzymes (3 marks)

7. (a) Name the three major storage polysaccharides (1.5 marks)
   (b) Choose any one of the storage polysaccharides in (a) above and describe its structure (1.5 marks)
8. (a) Describe an aliphatic amino acid giving an example (2 marks)
   (b) State why aliphatic amino acids are mostly found buried inside protein molecules (1 mark)

9. Briefly outline how an understanding of genetics has improved agriculture (3 marks)

10. Using a Punnet square work out the F_2 genotypic ratios from inbred parental peas with phenotypes Tall white flowered x Short yellow flowered where yellow and short are recessive alleles. Let the genes for tallness be T and W for white colour. (3 marks)

SECTION B: ESSAY QUESTIONS (40 MARKS)

1. Describe the various levels of protein structure and mention their functions. (20 marks)
2. Discuss the structure and function of lipids in plant cells. (20 marks)
3. Describe DNA structure and replication. (20 marks)
4. Describe the mitotic phases of cell division. (20 marks)