



MERU UNIVERSITY COLLEGE OF SCIENCE & TECHNOLOGY

P.O. Box 972-60200 Meru - Kenya. Tel: 020-2092048, 020 2069349
Fax: 020-8027449

University Examinations 2011/2012

SECOND YEAR, FIRST SEMESTER EXAMINATIONS FOR DIPLOMA IN
AGRICULTURE AND AGRUCULTURAL EDUCATION AND EXTENSION

BIO 0210: AGRUCULTURAL BIOCHEMISTRY

DATE: APRIL 2012

TIME: 1½ HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE (30 MARKS)

- a. Explain why water is referred to as a polar molecule (2 Marks)
- b. Explain why water has a higher melting point when compared to other solvents with a simple molecular structure (2 Marks)
- c. Briefly explain how human beings are able to utilize plant starch as a source of energy (3 Marks)
- d. Outline four types of interactions between amino acids residues that lead to formation of secondary structures in proteins (4 Marks)
- e. States two important functions of steroids (2 Marks)
- f. Draw the basic structure of an amino acid molecule (2 Marks)
- g. Describe the tertiary structure of protein and explain its significance in biochemistry (4 Marks)
- h. Describe the tertiary structure of protein and explain its significance in biochemistry (4 Marks)
- i. Draw the basic structure of a triglyceride (3 Marks)
- j. State the two types of nucleic acids and describe their functions (4 Marks)
- k. Name the main components of cell membranes (2 Marks)

QUESTION TWO (15 MARKS)

- a. Discuss the composition and structure of plant starch (6 Marks)
- b. State and explain four conditions that can cause protein to denature (8 Marks)
- c. What is saturated fatty acid? (1 Mark)

QUESTION THREE (15 MARKS)

- a. Outline four types of protein their functions and give relevant examples of each (12 Marks)
- b. What is the significance of cis-unsaturated fatty acids in membrane phospholipids? (3 Marks)

QUESTION FOUR (15 MARKS)

- a. Outline six functions of cell membranes (6 Marks)
- b. Describe three functions of carbohydrates (6 Marks)
- c. Explain the differences that exist in between DNA and RNA (3 Marks)

QUESTION FIVE (15 MARKS)

- a. What is meant by facilitated diffusion through a membrane? give an example (4 Marks)
- b. What is gated ion channel? Give an example (5 Marks)
- c. State the most common disaccharides encountered I the human diet (3 Marks)
- d. Which are the building blocks of nucleotide? (Marks)