MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2013/2014

FOURTH YEAR FIRST SEMESTR EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE IN MEDICAL BIOTECHNOLOGYWITH INFORMATION TECHNOLOGY

(MAIN CAMPUS)

PMT 436: METHODS IN MOLECULAR BIOLOGY

Date: 19th November, 2013 *Time: 2.30 - 4.30 p.m.*

INSTRUCTIONS:

- **Attempt ALL the questions in Section A and ANY TWO questions from Section B.**
- **Illustrate your answers with suitable diagrams wherever necessary.**

PMT 436: METHODS IN MOLECULAR BIOLOGY

DEGREE OF BSC IN MEDICAL BIOTECHNOLOGY

INSTRUCTIONS

This examination consists of two sections: A and B.

Attempt all the questions in Section A and any two questions from Section B.

Illustrate your answers with suitable diagrams wherever necessary.

SECTION A –Compulsory (40 marks)

Attempt all the eight (8) questions. Each question carries 5 marks

1. Give an account of how to estimate the quantity and assess the quality of nucleic acids
2. Differentiate between Southern blotting and Northern blotting.
3. Explain the mutation detection process.
4. Explain any two processes or procedures of electrophoresis and visualization of PCR amplified products.
5. Differentiate between genomic and complementary DNA libraries and briefly explain how you can construct any one of them.
6. Give an account of the principles and uses of one method of DNA sequencing.
7. Explain the following:
   (a) DNA fingerprinting
   (b) DNA polymorphisms
8. Give and explain two procedures for detecting gene regulatory proteins.

SECTION B (30 marks)

Instructions

Attempt any **two** questions from this section. All questions carry equal marks (15 each).

9. Write an essay on nucleic acids extraction techniques.
10. Discuss the principles and applications of polymerase chain reaction (PCR) technology in biomedical research and practice.
11. Discuss the concept of molecular (nucleic acids) probes and their applications in biomedical research and practice.