MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2016/2017

THIRD YEAR FIRST SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE WITH INFORMATION TECHNOLOGY

MAIN CAMPUS

SZL 305: MOLECULAR BIOLOGY

Date: 2nd December, 2016 Time: 8.30 - 11.30 am

INSTRUCTIONS:

- Answer ALL questions in SECTION A (40 marks and any THREE in SECTION B (60 marks each).
- Use illustrations where possible

MAIN CAMPUS

SZL 305: MOLECULAR BIOLOGY

Date: **Time:**

INSTRUCTIONS:

1. Answer **ALL** questions in section A (40Marks) and any THREE questions in SECTION B (60 Marks)
2. Illustrate your answer (s) with diagrams where appropriate

SECTION A (40Marks). Each question carry equal marks (5 Marks)

Q1. Briefly discuss the two classifications of mutations

Q2. Define the following terms in Molecular Biology

(i) Gene (ii) Codon (iii) Replicon (iv) Nucleotide

(v) "Okazaki" fragment

Q3. List the three dominant steps found in each cycle of PCR process

Q4. Briefly discuss the enzymes needed in making cDNA in their order

Q5. Briefly explain the functions of single – stranded Binding proteins (SSBs) and primase

Q6. Citing their functions, compare between isoelectic and gradient gel electrophoresis and their functions

Q7. State and briefly explain the **FIVE** properties of cloning vectors

Q8. Give five examples of the use of recombinant DNA technology

SECTION B (60 Marks) Answer ANY THREE questions in this section

Each question carry equal marks (20 Marks)

Q9. Citing specific examples, discuss the properties and types of restriction endonucleases

Q10. Discuss the process of developing transgenic organism and their significance in biomedical sciences

Q11. Discuss the topology of DNA in light of spatial relationship

Q12. Discuss the process of DNA sequencing

Q13. Discuss the process of protein biosynthesis