

**MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY**

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**University Examinations 2015/2016**

SECOND YEAR, FIRST SEMESTER EXAMINATION FOR BACHELOR OF SCIENCE IN ANIMAL HEALTH AND PRODUCTION

**SZL 3250 : MOLECULAR BIOLOGY**

**DATE: NOVEMBER, 2015 TIME:** $2 $**HOURS**

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

**QUESTION ONE – (30 MARKS)**

1. State the meaning of the following terms; (4 Marks)
2. Replication
3. Transcription
4. Translation
5. Nucleotide
6. Explain briefly any four areas where molecular biology techniques have been applied.

(4 Marks)

1. Highlight two differences between DNA and RNA. (2 Marks)
2. Describe briefly the key steps involved in PCR process. (4 Marks)
3. Explain what cloning vectors are and their application citing two examples. (5 Marks)
4. Explain two factors that affect restriction enzymes activity. (2 Marks)
5. Outline the five characteristics of the ‘Genetic code’. (5 Marks)
6. Explain briefly citing examples the mechanism of repair of damaged DNA. (4 Marks)

**QUESTION TWO (20 MARKS)**

Discuss the molecular activities at the replication fork. (20 Marks)

**QUESTION THREE (20 MARKS)**

The three DNA polymerase enzymes are key to DNA replication. Discuss this statement.

(20 Marks)

**QUESTION FOUR (20 MARKS)**

Discuss any three key areas where Biotechnology has been applied. (20 Marks)

**QUESTION FIVE (20 MARKS)**

Discuss the process of cDNA library construction. (20 Marks)