**W1-2-60-1-6**

**JOMO KENYATTA UNIVERSITY** **OF AGRICULTURE AND TECHNOLOGY**

# UNIVERSITY EXAMINATIONS 2015/2016

**THIRD YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN GENOMIC SCIENCES**

**SZL 2319: GENOME STRUCTURE AND EXPRESSION**

**DATE: APRIL 2016 TIME: 2 HOURS**

**INSTRUCTIONS: ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER**

 **TWO QUESTIONS**

**QUESTION ONE**

a) What is a genome. [1 mark]

b) Explain the use of the following genome components as landmarks in

 cytogenetic analysis.

 (i) Nucleolar organizers. [2 ½ marks]

 (ii) CentroMere position. [2 ½ marks]

c) Distinguish the following

 (i) DNA transposon and Retrotransposons. [2 marks]

 (ii) Tandem repeats and Terminal repeats. [2 marks]

 (iii) ChromoMere patterns and Heterochromatin patterns. [2 marks]

 (iv) Introns and Exons. [2 marks]

d) Describe briefly distinct classes of introns . [6 marks]

e) Given an account of different types of tandem repeats. [6 marks]

f) Briefly explain types of non-coding sequences in eukaryotic genome.

 [4 marks]

**QUESTION TWO**

Describe the occurrence of interpersed repeats in eukaryotic genome. [20 marks]

**QUESTION THREE**

Describe the cleavage of pre-MRNA complex during RNA processing.

 [20 marks]

**QUESTION FOUR**

a) Explain the role (s) of different proteins involved in DNA replication

 [10 marks]

b) Describe types of RNA. [10 marks]

**QUESTION FIVE**

a) Describe how genes are organized on the chromosome. [10 marks]

b) Discuss stages of regulation of gene expression. [10 marks]