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EMBU UNIVERSITY COLLEGE
(A CONSTITUENT COLLEGE OF THE UNIVERSITY OF NAIROBI)

EXAMINATION 2013/2014
FIRST YEAR EXAMINATION FOR THE DEGREE OF MASTERS OF SCIENCE IN
GENETICS

SBT 546: MUTATIONS

DATE: DECEMBER 5, 2013

TIME: 11.00 - 2.00 PM

INSTRUCTIONS:

Answer ANY FOUR Questions.

QUESTION 1

- a) Discuss the difference between somatic mutation and germinal mutation. (10marks)
- b) Differentiate among the following. (6marks)
- i) Nullsomy from monosomy
 - ii) Trisomy from tetrasomy
 - iii) Double monosomy from double trisomy
- c) Describe how paracentric and pericentric inversions take place. (9marks)

QUESTION 2.

- a) Explain how Nitrous Acid, base analog and UV light induce mutation. (5marks)
- b) You are given the following DNA sequence "ACGTACGTAGAGTC". Using base analog dideoxynucleotides (ACGT) illustrate how to determine the base sequence of the DNA segment given above. (20marks)

QUESTION 3

- a) Explain how Radiation Damage Biological Systems. (10marks)
- b) Describe the manifestation of radiation sickness. (6marks)

c) Define the following terms

(9marks)

- i) Exposure (X):
- ii) Dose and Absorbed Dose (D)
- iii) Energy Imparted (E_D)

QUESTION 4

Describe the procedures for mutation induction in plant breeding.

(25marks)

QUESTION 5

a) Discuss the roles and limitations of mutagenesis in crop improvement.

(12marks)

b) Explain how to introduce site directed mutagenesis using vector technique.

(13marks)

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