KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2007/2008

INSTITUTE OF OPEN LEARNING

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION AND BACHELOR OF SCIENCE

SBT 401: GENERAL GENETICS

DATE: Thursday 10th January 2008 **TIME:** 8.00 – 10.00 a.m.

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INSTRUCTIONS:

Answer ALL questions in Section A and TWO questions in Section B. Answers to Section A should be written in the spaces provided in the question paper.

SECTION A: Short answer questions (each 5 marks)

1. Differentiate quantitative and qualitative traits.

2. Which of the following populations are in Hardy Weinberg equilibrium? Calculate equilibrium positions for those that are not in equilibrium.

.2	.4	.4
.4	.6	0
.1	.8	.1
.3	.4	.3
.6	.2	.2
.1	.3	.6

3. What problems are likely to occur in a marriage involving a Rhesus positive man and a Rhesus negative woman? What advice would you offer such a couple intending to have children?

4. Briefly describe one example of maternal effects.

5. Write briefly on genetic load.

SECTION B: **Essay questions. Answer any TWO questions.**

1. Write an essay on various ways genetic variations are maintained in natural populations.
2. Differentiate, using named examples, maternal effects and plasmogenes forms of cytoplasmic inheritance.
3. Explain how blood groups may be used to settle parentage and pedigree confirmation disputes. What other methods are available to perform the same task?

1. In a certain plant species three genes are linked in the order:

A/a B/b C/c

{_____ 10mu _____} {_____ 20mu_____}

One plant is available to you. Assume that it is the parental plant, with genetic constitution Abc/aBC.

(a) Assuming no interference, if the plant is crossed with another of the genetype abc/abc/abc, list the genotypes of the progeny expected and their frequencies.

(b) Repeat (a) assuming 30% interference between the two regions.