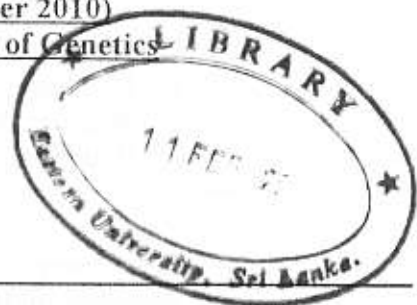EASTERN UNIVERSITY, SRI LANKA
Faculty of Agriculture
Second year Second Semester Examination in Agriculture 2008/2009
(October /November 2010)
AGB 2202: Principles of Genetics

Time: 03 hours

Answer all questions

Q1. Explain the following with a suitable example for each.
  a. Dominance and recessiveness
  b. Co-dominance
  c. Semi- dominance

Q2. Discuss
  a. Process of crossing over
  b. Procedure to determine the linkage relationship of genes in a tri-hybrid genotype.

Q3. Describe the following
  a. Polygene and their characteristics
  b. Inheritance patterns of polygene using a suitable example

Q4. a. State Hardy – Weinburg equilibrium and the conditions to maintain this equilibrium.

  c. Consider a population of diploid organisms consisting of two alleles A and a. In a sample of 300 individuals from this population, suppose there are 148 AA, 124 Aa and 28 aa individuals.

Calculate
  i.   The frequencies of A and a alleles in this population
  ii.   The number of different genotypes in the next generation of size of 300 individuals when there is random combination of alleles (Show the details of your calculation)
  iii. Is this population in genetic equilibrium and if so give reasons.

P.T.O

Q5. Write short notes on
a. Prophase I of meiosis
b. Translocation of chromosome
c. Polyploidy

Q6. It is suspected that the execretion of the strong odorous substance
methanethiol is controlled by a recessive gene "m" in human. If the
frequency of "m" is 0.4 in Batticaloa human population, what is the
frequency of finding two non-excretor boys and one excretor girl in the
families of Batticaloa of size three, where both parents are non-excretors?
Note that non-excretor is governed by the dominant allele M?