Eastern University, Sri Lanka
Second year First Semester Examination in Agriculture 2005/2006
(External Degree)
(February/March/April 2011)

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AGB 2102 Principles of Genetics

Answer All Questions. **Time: 03 Hours**

Q1. Explain the following with suitable examples.
a) Dominance and recessive genes
b) Co-dominance
c) Semi-dominance

Q2. a) Define " Mendelian population"
b) A hypothetical population consists of the genotypes AA, Aa and aa at frequencies p^2, 2pq and q^2 respectively. Show that this population is in genetic equilibrium if there is random mating taken place in this population. (Each step should be given clearly)

Q3. Describe
a. Process of crossing over
b. Procedure to determine the linkage relationship of genes in a tri hybrid genotype.

Q4. Briefly discuss
a) Prophase I of meiosis
b) Cell cycle
c) Interference and coincidence

Q5. Describe the following
a) Polyploidy and their characteristics
b) Translocation in chromosomes and its consequences
c) Polygenes and their behaviour

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