

EASTERN UNIVERSITY, SRI LANKA
SECOND YEAR FIRST SEMESTER EXAMINATION IN
AGRICULTURE 2003
AGB 2102 - PRINCIPLES OF GENETICS

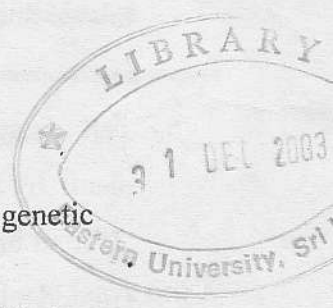
Answer All Questions
Time : 03 hours.

1. a) Describe a "Mendelian Population"
b) List out the conditions required for a population to remain at genetic equilibrium.
c) Discuss the effects of mutation and migration on genetic equilibrium.

2. a) Explain the terms "Linkage and Crossing Over"
b) What are the aspects to be considered in gene mapping?
c) Explain the approach to determine the linkage relationship of genes of a trihybrid parent?

3. Describe the following
 - a) Different types of euploidy and their important characteristics.
 - b) Quantitative inheritance with a suitable example

4. Explain the following
 - a) Interference and coincidence
 - b) Co-dominance
 - c) Chromosomal deletion



(P.T.O)

5. It is suspected that the excretion of the strong odorous substance methanethiol is controlled by a recessive gene ' m ' in man; non-excretion is governed by the dominant allele ' M '. If the frequency of ' m ' is 0.4 in Batticaloa, what is the probability of two non excretor boys and one excretor girl in Batticaloa families of size three where both parents are non- excretors?
6. Tall tomato plants are produced by the action of a dominant allele ' D ' and dwarf plants by its recessive allele ' d '. Hairy stems are produced by a dominant gene ' H ' and hairless stems in its recessive allele ' h '. A dihybrid tall hairy plant is test crossed and the progeny of this testcross were observed to be

Tall, hairy	118
Dwarf, hairless	121
Tall, hairless	112
Dwarf, hairy	109

- Diagram this cross.
- What is the ratio of tall: dwarf; of hairy: hairless.
- Are these loci assorting independently of one another?
- If there is a deviation from the ratio given, explain the possible reason.