



**Eastern University, Sri Lanka**  
**Second Year First Semester Examination in Agriculture 2003/2004**  
**AGB- 2102 Principles of Genetics**  
**End Semester Examination**

Time: 03 Hours

Answer All Questions

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1. Explain each with a suitable example.
    - a. Dominance and recessiveness (40 Marks)
    - b. Codominance (30 Marks)
    - c. Incomplete dominance (30 Marks)
  
  2. Describe
    - a. Linkage and crossing over (30 Marks)
    - b. Translocation in chromosomes (40 Marks)
    - c. Mendelian Population (30 Marks)
  
  3. (a) Define a polygene (30 Marks)  
(b) Briefly discuss the inheritance of polygenes with an example (70 Marks)
  
  4. Write short notes on
    - a. Tetraploidy (30 Marks)
    - b. Interference and coincidence (30 Marks)
    - c. Hardy – Weinberg equilibrium (40 Marks)
  
  5. Hydrocephalus is a disease found in mouse and one would expect that it is inherited in the ratio of 3:1. The following data were obtained from a number of litters.

Normal	2069
Hydrocephalus	405

    - a. Test the data that they fit the ratio 3:1  
(chi-square table is provided) (75 Marks)
    - b. If the deviation is large, what would be the probable reason? (25 Marks)
  
  6. 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 Sri Lankan population. What is the probability of finding two non-excretor boys and one excretor girl in Sri Lankan families of three where both parents are <sup>non</sup> excretors. (100 marks)