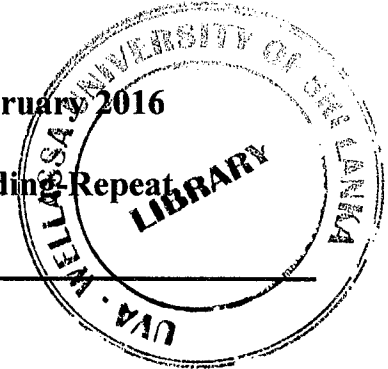


Uva Wellassa University of Sri Lanka  
Faculty of Animal Science & Export Agriculture  
Aquatic Resources Technology Degree Programme  
Animal Science Degree Programme

Year I Semesters II  
End Semester Examination - January/February 2016

ANS 101-2 Principle of Genetics and Breeding Repeat  
Section I (Essay)



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**Instructions**

Answer all questions in Section I in booklets provided.

No. of questions : Four (04)

No. of pages : Two (02)

Time : Two hours (02 hours)

Total marks allocated : 100%

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1. I. Explain the importance of pedigree analysis in animal breeding programs.

(15 marks)

II. Briefly describe two examples for lethal genes.

(10 marks)

2. I. What are Hardy Weinberg equations?

(05 marks)

II. In Zebra Mussel population, most of the individuals have dark, zebra-striped shells. However, solid light-colored shells (caused by a homozygous recessive gene, aa) occur in 10 of every 1000 individuals. In a population of 1000 individuals,

a) Calculate gene frequencies of dominant homozygotes (AA), heterozygotes (Aa) and recessive homozygotes (aa).

(10 marks)

- b) Calculate number of dominant homozygotes (AA), heterozygotes (Aa) and recessive homozygotes (aa).  
(10 marks)
3. I). In guinea pigs, short hair is dominant to long hair and black eyes are dominant to red eyes. A male guinea pig that is heterozygous for both traits is crossed with a female that is long haired and red eyed.
- a) What are the expected phenotypes of their offsprings?  
(05 marks)
- b) Calculate the proportion of each phenotype.  
(10 marks)
- II). After a Dihybrid cross, you are having three types of phenotypes, with a ratio of 9:3:4.
- a) What is the name of this deviation from Mendal's Dihybrid ratio?  
(02 marks)
- b) Explain this incidence using a suitable genetic cross diagram.  
(08 marks)
4. Write short notes on **two (02)** of the following.
- I. Mitosis cell division
  - II. Euploidy
  - III. Genetic drift

(12.5×2=25 marks)

[End of Section I]