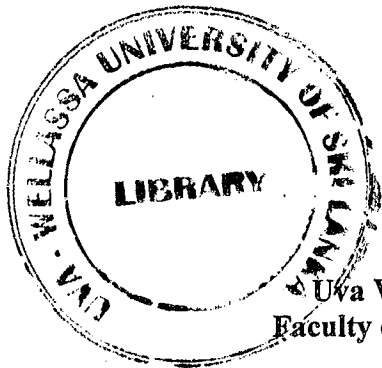




Uva Wellassa University of Sri Lanka
Faculty of Animal Science & Export Agriculture



Uva Wellassa
University

Aquatic Resources and Technology degree programme
Year II Semester I
End Semester Examination –March/ April 2013

AQT 213-2 Fish Genetics –Essay - (Section III)

Instructions

Answer all questions in Section III in the booklet provided

No. of questions : Two (02)

No. of pages : Two (02)

Time : One hour (1hr.)

Total marks allocated : 60%

Index No:

1.

Reduced number of rays in dorsal fin is a defective recessive condition in platy fish controlled by a single recessive gene 'r'. The Dominant allele 'R' is normal. A population initially had reduced number of rays in dorsal fin (rr) at the frequency of 6%.

- a. Calculate gene [$f(R)$ and $f(r)$] and genotype [$f(RR)$, $f(Rr)$ and $f(rr)$] frequencies with regard to reduced number of rays in dorsal fin in the present population.

(20 Marks)

- b. In another Platy population, it was estimated that frequency of 'r' allele was 0.5 and a breeder wants to reduce it to 0.1.

Calculate the number of generations that the farmer has to select totally against 'r' allele to reduce the frequency of 'r' from 0.5 to 0.1?

$$n = (1/q_n) - (1/q_0)$$

(10 Marks)

- c. If the farmer wants to eliminate above mentioned character from the breeding stock with a breeding programme completely against the recessive allele, comment on the efficiency of selection against 'a recessive gene'.

Note that the defective fishes are surviving and can perform breeding

(20 marks)

2. Write short notes on,

- a) Quantitative characters
- b) Breeding value
- c) Genetic sex determination of fish

(100 Marks)

[End of section III]