EASTERN UNIVERSITY, SRI LANKA

FOURTH YEAR FIRST SEMESTER EXAMINATION IN AGRICULTURE 2008/2009

OCTOBER/NOVEMBER - 2010

ASC 4105 ADVANCED ANIMAL BREEDING

Answer all questions

Time allowed: One hour

1. Briefly explain the role of molecular markers in selection of farm animals for breeding.

2. a) A full-sib analysis was conducted to estimate the heritability of age at sexual maturity of naked nec chicken. A random set of 100 birds were allocated to 10 cocks (10 dams per sire) following a nested desig Age at sexual maturity (point-of lay in days) was measured in five female chicks from each full sib family The partial ANOVA table is given below.

Source of variation	Degree of freedom	Sum of squares	Mean of square
Between sires	.....	600	.....
Between dams with sires	.....	1100	.....
Within full sibs	.....	.....	.....
Total	.....	3300	

i) Calculate sire, dam and error components of variance.
ii) Find additive genetic variance, phenotypic variance and heritability of age at sexual maturity.
iii) Comment the value of heritability you calculated.

b) In the Livestock farm, EUSL, the best hen for egg production has been selected based on her own reco and the best cock for egg production has been selected based on his daughters record. The egg production the best hen and cock are given below;

Annual egg production of the best hen = 312 eggs/year
Annual egg production of the best cock = 262 eggs/year
Mean of the population = 246 eggs/ year

Answer the following questions.

i) Identify the method/s of selection used in hen and cock selection/s.
ii) Calculate the accuracy of selection of the two methods mentioned in b (i).
Assume that only one record is used in each selection, and the heritability of the egg production 0.5987.