

Uva Wellassa University of Sri Lanka
 Faculty of Animal Science & Export Agriculture
 Animal Science and Aquatic resources Technology Degree Programmes
 Year I Semester I
 End Semester Examination –September/October 2015



ANS 101-2 Principles of Genetics and Breeding
 Section III (Essay)



Instructions

Answer all questions in Section III in booklet provided.
 No. of questions : Two (02)
 No. of pages : Two (02)
 Time : One hour (01 hr.)
 Total marks allocated : 60%

1. I. Define “Linkage” (05 marks)

II. A researcher conducted a **three point test cross** to map three genes v, c, g and their wild types (+, +, +). Observed values for genotypes are given below; locate the three genes (v, c and g) in the chromosome

Gene combinations			Observations
v	c	g	1015
+	c	+	249
v	+	g	254
+	c	g	8
+	+	+	1370
v	c	+	159
v	+	+	9
+	+	g	189

(20 marks)

2. I. Inversions result when there are two breaks in a chromosome and the detached segments becomes reinserted in reversed order.

a). What is meant by a Paracentric Inversion?

(05 marks)

b). Given a **Paracentric Inversion** heterozygote with one chromosome in **normal order (1 2 3 4 5 6)** & the other in the **inverted order (1 2 .3 5 4 6)**,

i). Give in a diagram the **pairing pattern at the Pachytene Stage**.

(05 marks)

ii). Draw a labeled diagram of the resulting chromosomes after a **single cross over** occurred between **5 & 4 regions**.

(10 marks)

II. In a certain flock of sheep, **4% of the population has black wool and 96% has white wool**. If **black wool is a recessive trait**, calculate the **allele frequency (p and q)**.

(05 marks)

[End of Section III]