

**EASTERN UNIVERSITY, SRI LANKA**  
**SECOND YEAR IN SCIENCE 1998/99 (Re-repeat)**  
**EXTERNAL DEGREE(TERM SYSTEM) 2004/05 AP 2008**  
**EXZL 201 GENETICS**

**Time: 02 Hours**

**Answer any four questions only.**

**(Illustrate your answers with clear labeled diagrams where necessary)**

1. Distinguish the following
  - a. Phenotype and Genotype
  - b. Monohybrid cross and Test cross
  - c. Dominant allele and recessive allele
  
2. Write short notes on **any two** of the following
  - a. Polytene chromosome
  - b. RNA splicing
  - c. Plasmid
  
3. a. What is a mutation?  
 b. How do you detect mutations?  
 c. Describe one of the methods that you have mentioned in 3 (b).
  
4. Comment on **any two** of the following
  - a. Lethal mutation
  - b. Formation of recombinant DNA
  - c. Formation of polyploids
  
5. In fruit flies, grey body(G) is dominant to black body (g), normal wing (V) is dominant to vestigial wing(v) and long bristles on the body (S) is dominant to short bristles (s). In a trihybrid test cross, the following off springs were obtained.

+++	313	g++	60
gsv	310	gs+	130
+sv	57	+s+	02
++V	127	g+v	01

(contd---)

- a. Are these genes linked?
  - b. Determine the gene order.
  - c. Calculate the map distance between the three genes G, S and V?
6. a. Corn has a colour gene and height gene with the following phenotypes.

CC,Cc - purple  
cc - white

TT – tall  
Tt - - medium  
tt - dwarf

If a dihybrid is selfed, give the resulting proportions of genotypes and phenotypes produce.

- b. Red green colour blindness in humans is recessive and sex- linked. A normal woman whose mother was colour blind marries a colour blind man. They produce a son and a daughter.
- i) What is the probability that the son is colour blind?
  - ii) What is the probability that the daughter is colour blind?

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