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Eastern University

EASTERN UNIVERSITY, SRI LANKA
EXTERNAL DEGREE

SECOND EXAMINATION IN SCIENCE 1996/97 (June 2004)
EXZL 201 PRINCIPLES OF GENETICS

Time: 02 hours

Answer any **four** questions.

(Illustrate your answers with clear, labelled diagrams where necessary)

1. Explain the following:
 - a. RNA splicing,
 - b. Formation of polyploids.

2. Comment on any **two** of the following:
 - a. Holandric genes,
 - b. Lethal mutations,
 - c. Epistasis.

3.
 - a. What is recombinant DNA technology?
 - b. Describe in detail the application of recombinant DNA with a known example.

4.
 - a. What is attached X condition (X^X)?
 - b. Describe in detail how a meta female is formed in a *Drosophila* culture.

5. Write short notes on any **two** of the following:
 - a. Barr bodies,
 - b. Co-dominance,
 - c. Termination codons.

Contd/2

- a. A colour blind woman and man with normal vision have a colour blind son who is 47, XXY and shows characteristics of Klinefelter syndrome.
- What sex chromosomes were present in the egg and the sperm that fused to produce their son?
 - If Barr body counts are made for both parents and their son, would the son's cells resemble those from his mother or those from his father?
 - If these two people have another son of the normal 46 XY chromosome constitution, what is the probability that he would be colour blind?
- b. In cultivated flowers, called "cream rose", pigment is controlled by two independently assorting alleles. When the dominant allele **A** is present at one locus, **C** at the other locus lead to red; **cc** leads to cream. The double recessive **aa** at the first locus produce a white flower regardless of alleles at the second locus.
- If a homozygous red stock is crossed with a white variety, what phenotypic and genotypic ratios are expected in the F1 and F2 generations?
 - Give the name of the phenotypic action.