



GARY MAGADZIRE SCHOOL OF AGRICULTURE

DEPARTMENT OF SOIL AND PLANT SCIENCES

BACHELOR OF SCIENCE HONOURS DEGREE IN CROP SCIENCE (SOIL AND PLANT SCIENCES)

LEVEL 1 SEMESTER 1

MAIN EXAMINATION QUESTION PAPER

MODULE CODE: ACS 113

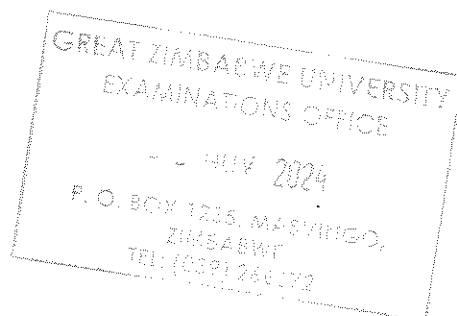
MODULE NARRATION: INTRODUCTION TO GENETICS

DATE:

DURATION: 3 HOURS

INSTRUCTIONS TO CANDIDATES:

- 1. Answer any FOUR questions.**
- 2. Each question carries 25 marks.**



1. With special emphasis on numerical and structural chromosome mutations, discuss the five effects of mutations on crop plants and animals. [25]
2. Based on your our understanding of cell and nuclear division.
 - a) Explain the significance meiosis in maize plants from seedling to maturation. [10]
 - b) Outline the cell cycle as it occurs in animal or plant cells. [15]
3. Using your knowledge of genetic engineering in agriculture, outline how crop plants such as rice are modified by genetic engineering. [25]
4. Based on your understanding of Mendelian of genetics
 - a) Explain the results of these two genetic cross: Petunias can be blue, red, or violet.
 - i) When a petunia with blue flowers is crossed with a red flowered petunia, all the resulting offsprings had violet flowers. [8]
 - ii) When a petunia with violet flowers is crossed with a petunia with red flowers, about half of the offsprings had violet flowers and half had red flowers. [7]
 - b) Explain how you would determine the genotype of a tall garden pea plant, given that tallness is dominant over dwarfism. [10]
5. Using your knowledge of gene expression in crop plants and animals
 - (a) Give a detailed account of the features of a genetic code. [10]
 - (b) Discuss three types of point (gene) mutations on crop plants and animals. [15]
6. Explain how sex is inherited in organisms such as goats (mammals), birds and grasshoppers and ants. [25]

END OF EXAMINATION PAPER