



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2010/2011

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE AGRICULTURE

KST 201: PRINCIPLES OF GENETICS

DATE: Tuesday 29th March, 2011

TIME: 11.00 am – 1 .00 p.m

INSTRUCTIONS

ANSWER ALL QUESTIONS IN SECTION A (5 MARKS EACH)

1. Describe the stage of meiosis, which explains Mendel first and Second law, giving reasons. (5 marks)
2. Distinguish between pollen grain and microspores. (5 marks)
3. Distinguish between hemizygosity, homozygosity and heterozygosity. (5 marks)
4. Define factors that enhance spontaneous mutations. (5 marks)
5. Explain why maximum recombination is 50%. (5 marks)
6. Discuss the methods used for genetic analysis in F₂ populations and indicate their limitations. (5 marks)

7. Define Holandric genes giving an example. (5 marks)
8. “Qualitative traits differ in kind while quantitative traits differ in degree”. Discuss. (5 marks)

SECTION B:

Answer any **TWO** Questions (Each 15 Marks)

9. Discuss mutagenesis. (5 marks)
10. (i) Define Hardy-Weinberg equilibrium. (5 marks)

Homozygotes in a population in Hardy-Weinberg equilibrium have frequencies of 0.36 and 0.16 respectively. In a population of 40,000 individuals calculate the number of individuals of each genotype. (10 marks)

11. Discuss the expected number of gametes, genotypes, phenotypes and minimum population size for four genes in F_2 populations.
12. Discuss the merits and demerits of genetically modified plants. (15 marks)