



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2011/2012

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE
IN ANIMAL PRODUCTION AND HEALTH MANAGEMENT
KAP 101: GENERAL GENETICS

DATE: MONDAY, 2ND APRIL 2012

TIME: 8.00 A.M. – 10.00 A.M.

INSTRUCTIONS: Answer Q1 and any other THREE questions.

1.
 - (a) List five differences between meiosis and mitosis. (5 marks)
 - (b) Define homozygous, heterozygous, homozygote, heterozygote and monohybrid. (5 marks)
 - (c) Using illustration discuss spermiogenesis. (5 marks)
 - (d) Discuss Triple allelism in relation to the human blood groups. (5 marks)
 - (e) Dominant gene (C) in chicken is responsible for aberrant forms called “creepers” that have short crooked legs that are of little economic value and the homozygous genotype (CC) is lethal. Describe the phenotypic and genotypic ratios when two creepers mate. (5 marks)
2.
 - (a) Discuss the cell cycle indicating when chromosomes are unipartite and bipartite.
 - (b) Discuss the basis of cytoplasmic inheritance. (5 marks)
 - (c) Discuss pedigree analysis and crossing in human and plant genetics. (5 marks)
3. Briefly discuss oogenesis (15 marks)
4. In pigeons, the checkered pattern is dependent on a dominant gene C and a plain exterior on the recessive c. Red colour is controlled by a dominant gene B and brown by recessive allele b. Describe the phenotypic and genotypic ratios in F₂ of a cross between homozygous checkered red birds and plain brown birds using both **Punnett square and Forked-line** methods. (15 marks)
5. In a population of 160,000 individuals that is in Hardy-Weinberg equilibrium, 78,400 and 14,400 individuals are homozygous for each allele respectively. Calculate:
 - (i) The number of heterozygotes. (3 marks)
 - (ii) The frequency of all genotypes. (6 marks)
 - (iii) The frequency of the alleles. (6 marks)