JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF AGRICULTURAL AND FOOD SCIENCES

FOURTH YEAR SECOND SEMESTER UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN HORTICULTURE

2018/2019 ACADEMIC YEAR

REGULAR

COURSE CODE: AAS 3215

COURSE TITLE: ANIMAL GENETICS

EXAM VENUE: STREAM: BSc. Horticulture

DATE: EXAM SESSION:

TIME: 2 HOURS

Instructions:

1. Answer ALL the questions in section A and any TWO in section B.
2. Candidates are advised not to write on question paper.
3. Candidates must hand in their answer booklets to the invigilator while in the examination room.

SECTION A [30 MARKS]

Answer ALL questions from this Section.

Q1.

(a) Draw structure of a gene and explain functions of its parts (3 marks)

(b) Define the term relative fitness (1 mark)

(c) How does animal breeding utilizes trait variation. (2marks)

(d) Differentiate between mitosis and meiosis. (4 marks)

Q2. a. Briefly describe the structures of the following: Chromosomes, DNA and genes (5 marks)

b. Using formulae and variances explain what constitutes the phenotypic value of an individual (3 marks)

c. Using formulae differentiate between broad and narrow sense heritability (2 marks)

Q3. a Describe the technique of chromosome mapping. (5 marks)

b.Using a diagram explain how self fertilization affects heterozygosity and homozygosity over time. (3 marks)

c. If heterozygosity (H) was initially 0.5, what would be the expected level of heterozygosity after 5 generations? (2 marks)

SECTION B [40 MARKS]

Answer any TWO QUESTIONS in this Section.

Q4. Describe the role and different methods of animal selection (20 marks)

Q5. The different animal breeding schemes may be grouped into pure breeding and crossbreeding. Discuss. (20 marks)

Q6. Hardy-Weinberg equilibrium is very important in population genetics. State it, the equation involved and its important assumptions. (20 marks)