JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF AGRICULTURAL AND FOOD SCIENCES

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

2018/2019 ACADEMIC YEAR

REGULAR

COURSE CODE: AHT 3221

COURSE TITLE: Plant Breeding

EXAM VENUE: **STREAM: BSc. Horticulture and BSc Agric Ext Education**

DATE: 18/4/19   **EXAM SESSION: 12.00 – 2.00pm**

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) Define genetic drift?   (2 marks)

    (b) Explain the importance of genetic variation in plants   (3 marks)

    (c) Write short notes on incomplete penetrance and hybrid vigour   (3 marks)

    (d) Define mutation breeding   (2 marks)

Q2.

    (a) Give a brief account of polygenic inheritance   (3 marks)

    (b) If heterozygosity (H) was initially 0.5, what would be the expected level of heterozygosity after 4 generations?   (3 marks)

    (c) Outline four mechanisms that can maintain variation in species   (4 marks)

Q3.
    (a) Briefly explain Mendel's principle of segregation   (4 marks)

    (b) Write explanatory notes on Back-cross breeding method   (3 marks)

    (c) Differentiate between In vitro and Soma-clonal selection   (3 marks)

SECTION B [40 MARKS]

Answer any TWO QUESTIONS from this Section.

Q4. (a) Critique biotechnology as a special technique in crop improvement   (20 marks)

Q5. Discuss Hybridization with reference to Pedigree and Bulk Population breeding (20 marks)

Q6. Discuss breeding for disease and insect resistance in plants   (20 marks)