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 AGRICULTURAL EXTENSION EDUCATION

2020/2021 ACADEMIC YEAR

SPECIAL/RESIT EXAMS

COURSE CODE: AHT 3224

COURSE TITLE: Principles of Plant Breeding

EXAM VENUE: **STREAM: BSc. Agricultural Extension Education**

DATE: **EXAM SESSION:**

TIME: 2 HOURS

Instructions:

1. **Answer ALL questions in section A and ANY other 2 Questions 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

1. Defineor Explain the following terminologies

(a) Plant breeding **[1 MARK]**

(b) Cultivar**[1 MARK]**

(c) Foundation seed **[1 MARK]**

(d) Center of diversity**[1 MARK]**

(e) Genotype **[1MARK]**

(f) Gene pyramiding**[1MARK]**

(g) Locus **[1 MARK]**

(h) Mass selection **[1 MARK]**

(i) Breeder seed **[1 MARK]**

(j) Hybrid cultivars **[1 MARK]**

2. There are several techniques for broadening genetic base. DESCRIBE TWO of them **[5 MARKS]**

3. A plant breeder will knowledge in many subjects. List TEN of those subjects:[**5 MARKS]**

4. Describe FIVE mechanisms of outcrossing **[5 MARKS]**

5. Describe FIVE methods of propagation used in clonal crop production. **[5 MARKS]**

SECTION B (40 MARKS)

Answer ANY TWO questions in this section

6a. Different crop species originated in different regions of the world. List the centers of originof thefollowing ten crop species: beans (*Phaseolus*spp), maize (*Zea mays*), rice (*Oryzasativa*), potato(*Solanum tuberosum*), soybean (*Glycine max*), sorghum (*Sorghum bicolor*),oil palm

(*Elaeisguineensis*),sunflower (*Helianthus* spp.), wheat (*Triticum* spp.), and barley (*Hordeum vulgare*).**[10 MARKS]**

6b.Explain, using examples as necessary, the meaning of the terms plant tolerance and plant escape inrelation to pest and disease resistance and plant breeding.**[10 MARKS]**

7. You were given a bag of seeds of a cereal crop you have never heard of before. Describewhat you would do with the seeds and what information you would collect that would allowyou to develop new cultivars from these seeds.**[20 MARKS]**

8. Describe TEN social concerns and consequences of biotechnology in agriculture.

[20 MARKS]