



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**SCHOOL OF AGRICULTURAL AND FOOD SCIENCES**

**DEPARTMENT OF PLANT, ANIMAL AND FOOD SCIENCES**

**FIRST YEAR FIRST SEMESTER UNIVERSITY EXAMINATION FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY IN FOOD SECURITY AND SUSTAINABLE  
AGRICULTURE**

**2019/2020 ACADEMIC YEAR**

**REGULAR**

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**COURSE CODE: AFB 6111**

**COURSE TITLE: Characterization and Optimization of Edible Insect Production**

**EXAM VENUE: STREAM: PhD. Food Security and Sustainable Agriculture**

**DATE: 2/09/19**

**EXAM SESSION: 9.00 – 12.00NOON**

**TIME: 3 HOURS**

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**Instructions:**

- 1. Answer question ONE and ANY other TWO Questions**
- 2. Candidates are advised not to write on the question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

1. (a) Insects contribute significantly to food security and sustainable agriculture. Explain the concept of food security **(4 marks).**  
(b) Using a specific example, list four orders in class insecta that are commonly used for food and feeds **(4 marks)**  
(c) Explain how entomophagy contributes to the achievement of Sustainable Development Goals? **(4 marks)**  
(d) Explain why the use of geographical information systems should be integrated in the study of natural populations of edible insects in East and Central Africa **(4 Marks)**  
(e) Understanding the biology of edible insects required for domestication and mass rearing is very important. As a researcher describe eight desirable characteristics that should be considered while selecting edible insects for mass rearing **(4 marks)**
2. Highlight and describe different criteria used to characterize and optimize edible insects **(20 marks)**
3. Discuss how insects contribute to food security and sustainable agriculture **(20 Marks)**
4. Discuss why edible insects are preferred to livestock as a source of proteins and six techniques used to evaluate their feeding preferences **(20 Marks)**
5. Explain challenges involved in rearing and breeding edible insects in Africa and current achievements **( 20 Marks)**