



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF AGRICULTURAL AND FOOD SCIENCES**  
**UNIVERSITY EXAMINATION FOR DEGREE OF BACHELOR OF SCIENCE IN**  
**HORTICULTURE**  
**3<sup>RD</sup> YEAR 2<sup>ND</sup> SEMESTER 2017/2018 ACADEMIC YEAR**  
**REGULAR**

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**COURSE CODE: AHT 3321**

**COURSE TITLE: HORTICULTURAL MACHINES AND FARM POWER**

**EXAM VENUE:**

**STREAM:**

**DATE:**

**EXAM SESSION:**

**TIME: 2 HOURS**

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**Instructions**

- 1. Answer ALL questions in Section A (compulsory) and ANY TWO questions in Section B**
  - 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**
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## **SECTION A: SHORT ANSWER QUESTIONS (30 MARKS)**

### **Answer all Questions in this Section**

1. State reasons for low adoption of wind power on many farms. (2 marks)
2. Name three sources of farm power. (3 marks)
3. List three construction features of IC engine (3 marks)
4. Explain the following operation and state the implements used for each operation.
  - a. Primary tillage (3 marks)
  - b. Secondary tillage (3 marks)
5. Explain two classifications of farm power used in agricultural operations (4 marks)
6. Explain two classifications of heat engines (4 marks)
7. Explain the main functions of a sprayer. (4 marks)

## **SECTION B: ESSAY QUESTIONS (40 MARKS)**

### **Answer Any Two Questions from this Section**

8. 3<sup>rd</sup> year horticultural students of JOOUST visited a horticultural farm and were introduced to different machines. Assuming you were part of the group, describe the differences between:
  - a. Spark ignition SI engine and Compression ignition IC engine (6 marks)
  - b. Two stroke cycle diesel engine and Four stroke cycle diesel engine (8 marks)
  - c. Explain the advantages a CI engine has over SI engine (6 marks)
9.
  - a. Classify tractors based on purpose and discuss the factors that are considered in the selection of a tractor. (14 marks)
  - b. Describe the differences between water and air cooling systems in a tractor. (6 marks)
10.
  - a. Write an essay on machinery cost in Agricultural production. (10 marks)
  - b. Describe the advantages of using a disc plough for land preparation. (10 marks)
11. Describe the advantages and disadvantages of the following sources of power.
  - a. Animal power. (10 marks)
  - b. Human power. (4 marks)
  - c. Mechanical power. (6 marks)