



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

**SCHOOL OF ENGINEERING AND TECHNOLOGY**

**UNIVERSITY EXAMINATION FOR THE DEGREE IN BACHELOR OF SCIENCE IN  
AGRICULTURAL EXTENSION EDUCATION/ BACHELOR OF SCIENCE IN FOOD  
SECURITY**

**3<sup>RD</sup> YEAR 1<sup>ST</sup> SEMESTER 2024/2025 ACADEMIC YEAR**

**CENTRE: SIAYA CAMPUS**

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**COURSE CODE: TCB 9301/AAB 2401**

**COURSE TITLE: FARM POWER AND MACHINERY/MECHANIZATION AND  
WORLD FOOD SITUATION**

**EXAM VENUE: STREAM: BSc. AGRICULTURAL  
EXTENSION EDUCATION/ FOOD SECURITY**

**DATE: /12/2024 EXAM SESSION:**

**DURATION: 2 HOURS**

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**Instructions**

- 1. Answer all questions in Section A and ANY two 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 THE QUESTIONS)**

**Q1.** (a) Briefly discuss what you understand by “Farm Mechanization and the problems facing its adoption. **(6 Marks)**

(b) Differentiate the following as applied fossil fuel power production.

i. External combustion engine and internal combustion engine **(3 Marks)**

ii. Four stroke and two stroke engine operating cycles **(3 Marks)**

**Q2** (a) Locate the following components/parts of a tractor stating their functions.

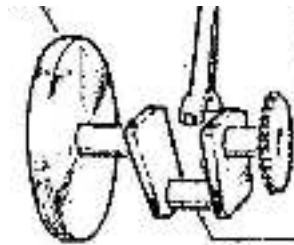
i. Piston ring **(2 Marks)**

ii. Rocker arm **(2 Marks)**

iii. Cylinder liner **(2 Marks)**

iv. Gudgeon pin **(2 Marks)**

(b) The following are parts of an engine. Identify them and state their functions. **(6 Marks)**



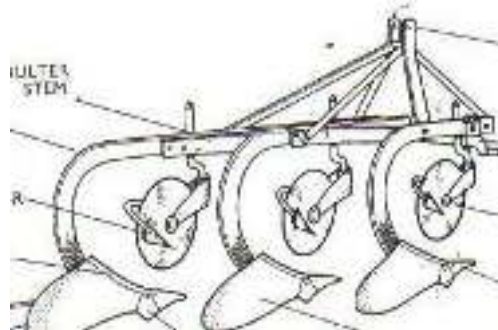
(b) Briefly outline the operational adjustment of a multi-bottomed disc plough. **(4 Marks)**

**SECTION B -40 MARKS (ANSWER ANY TWO QUESTIONS)**

**Q3. (a) Sketch, label and discuss a rotary cultivator (rotavators) with respect to the following; (10 Marks)**

- i. Its operation and factors affecting the soil tilth
  - ii. Advantages and disadvantages
- (b) Identify the components of the mould plough shown below state their functions.

**(10 Marks)**



**Q4. With reference to sowing /seed drill machinery explain the following;**

- i. Main parts and their functions **(8 Marks)**
- ii. Seed dispensing mechanism **(8 Marks)**
- iii. Maintenance procedure **(4 Marks)**

**Q5. (a) Discuss field crop spraying machines with respect to the following;**

- i. Main features and their functions **(8 Marks)**
- ii. Physical classification of sprays **(4 Marks)**
- iii. Variation of application rates **(4 Marks)**
- iv. Safety precautions **(4 Marks)**

**Q6. Discuss a combine harvester outlining the functions of the basic parts and describing its operation. (20 Marks)**