



*(Knowledge for Development)*

**KIBABII UNIVERSITY**  
**UNIVERSITY EXAMINATIONS**  
**2022/2023 ACADEMIC YEAR**

**THIRD YEAR FIRST SEMESTER**  
**SPECIAL/SUPPLEMENTARY EXAMINATIONS**

**FOR THE DEGREE OF BACHELOR OF EDUCATION SCIENCE,  
BACHELOR OF SCIENCE AGRICULTURE AND BIOTECHNOLOGY &  
BACHELOR OF SCIENCE AGRICULTURE EDUCATION AND  
EXTENSION**

**COURSE CODE: AEN 311**  
**COURSE TITLE: FARM POWER AND MACHINERIES**  
**DATE 17<sup>TH</sup> AUGUST 2023 TIME: 2 – 4 PM**

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**INSTRUCTIONS TO CANDIDATES**

Answer Question ONE and any other TWO Questions.

**TIME: 2 Hours**

This paper consists of 2 printed pages. Please Turn Over



**KIBU observes ZERO tolerance to examination cheating**

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**QUESTION ONE (30 MARKS) COMPULSORY**

- a. Define and illustrate the following terms as applied to engine operation **(5marks)**
  - i. cylinder bore
  - ii. stroke
  - iii. clearance volume
- b. State any five daily routine maintenance checks carried out on a tractor **(5marks)**
- c. Outline five factors that determine the source of power to be used on the farm **(5marks)**
- d. Give five demerits of farm mechanization **(5marks)**
- e. Explain five factors that influence draft of a plough **(5marks)**
- f. Elaborate any five maintenance practices on a combine harvester **(5marks)**

**QUESTION TWO (20 MARKS)**

- a. With the aid of a diagram, explain the operation of a FOUR -stroke cycle compression ignition engine of a tractor **(14marks)**
- b. Describe any three reasons for lubrication in the tractor engine. **(6marks)**

**QUESTION THREE (20 MARKS)**

- a. State three functions of a differential unit in a farm tractor **(3marks)**
- b) With the aid of a diagram explain the operation of a differential unit **(17marks)**

**QUESTION FOUR (20 MARKS)**

Explain the principle of operation of a pick- up baler **(20 marks)**

**QUESTION FIVE (20 MARKS)**

Describe the procedure followed in the field calibration of a planter **(20 marks)**.