



**KIBABII UNIVERSITY**

**UNIVERSITY EXAMINATIONS  
2021/2022 ACADEMIC YEAR**

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

**FOR THE DEGREE OF  
B.SC BEE & EDS**

**COURSE CODE: AEN 311**

**COURSE TITLE: FARM POWER AND MACHINERY**

**DATE 17<sup>TH</sup> NOVEMBER 2022**

**TIME: 2 – 4 PM**

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**INSTRUCTIONS TO CANDIDATES**

Answer **Question 1 (Compulsory)** and any other **TWO** questions

This paper consists of **3** printed pages. Please Turn Over 

KIBU observes **ZERO** tolerance to examination cheating

### QUESTION ONE (COMPULSORY) – 30 MARKS

- a. Define the following terms as applied to engine operation(6marks)
  - i. Cylinder bore
  - ii. Stroke
  - iii. Clearance volume
- b. Explain three ways of increasing tractor traction (6marks)
- c. Outline four possible causes of overheating of water cooled engines (4marks)
- d. Highlight the functions of the tractor power transmission units(4marks)
- e. Describe four limitations of using human power on the farm (4marks)
- f. State three ways of hitching implements on a tractor.(3marks)
- g. What are the factor affecting draft in a plough (3marks)

### QUESTION TWO – 20 MARKS

- a. A tractor is found to develop 1000 horse powers (hp) in 30 seconds. (12 marks)  
Calculate:
  - i. The amount of work done in newton metres;
  - ii. The distance moved by the tractor in 30 seconds if it developed a force of 250 newtons .Take 1hp=746watts
- b. Explain the care and maintenance services of the tractor battery (8marks)

### QUESTION THREE – 20 MARKS

1. Outline the function of the steering system of a tractor (2marks)
  - b) List any two types of steering boxes used on a tractor (4 marks)
  - c) With the aid of a diagram, explain the operation of the power steering system used on a tractor(14 marks)

### QUESTION FOUR – 20 MARKS

- a. Discuss the problems associated with mechanized agriculture (12 marks).
- b. Describe ways in which the depth of harrowing can be adjusted.(8 marks)

**QUESTION FIVE – 20 MARKS**

- a. State and explain methods of seed planting practiced in agriculture. (8 marks)
- b. With aid of a well labeled diagram , explain the principle of operation of a seed drill planter (12marks)