



(Knowledge for Development)

KIBABII UNIVERSITY
UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR

THIRD YEAR FIRST SEMESTER
MAIN EXAMINATION

**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 14TH DECEMBER 2022 TIME: 2 – 4 PM

INSTRUCTIONS TO CANDIDATES

Answer Question ONE and any other TWO Questions.

TIME: 2 Hours

This paper consists of 3 printed pages. Please Turn Over



KIBU observes ZERO tolerance to examination cheating

QUESTION 1 (COMPULSORY) (30 MARKS)

- a. Define the following terms **(4marks)**
 - i Brake power
 - ii PTO power
 - iii Drawbar power
 - iv Horse power
- b. State the functions of the following engine parts **(4marks)**
 - i. Fly wheel
 - ii. Connecting rod
 - iii. Crankcase
 - iv. Cylinder
- c. Outline four factors to be observed in order to get optimum power from draft animals **(4marks)**
- d. A one cylinder engine has a bore of 70mm, a stroke of 56mm and a clearance of 11.9 c.c. Calculate: **(5marks)**
 - i. Swept volume
 - ii. The compression ratio of the engine
- e. Give five losses experienced while using a combine harvester **(5marks)**
- f. Elaborate five maintenance practices on a mold board plough **(5marks)**
- g. Depth of plough penetration is influenced by plough adjustments. Outline any three adjustments carried out of a disc plough to improve penetration **(3marks)**

QUESTION TWO (20 MARKS)

Describe the following sources of power stating the advantages and disadvantages of each **(20marks)**

- i geothermal
- ii fossil fuel
- iii biomass
- iv solar power

QUESTION THREE (20 MARKS)

- a. Outline any four problems facing adoption of agricultural mechanization in Kenya **(8marks)**
- b. Describe any three methods of increasing tractor wheel traction **(6marks)**
- c. Explain any three possible causes of overheating of water cooled tractor engines **(6marks)**

QUESTION FOUR (20 MARKS)

- a. With the aid of a well labelled diagram explain the functions of the different parts of a mold board plough **(12 marks)**
- b. Discuss the differences between mold board plough and disc plough **(8 marks)**

QUESTION FIVE (20 MARKS)

Explain the processes that takes place in the various systems within a combine harvester **(20 marks)**