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KIBABII UNIVERSITY

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR**

**THIRD YEAR FIRST SEMESTER
MAIN EXAMINATIONS**

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

COURSE CODE: AEN 311

COURSE TITLE: FARM POWER AND MACHINERY

DATE: 24TH MAY 2022

TIME: 2 – 4 PM

INSTRUCTIONS TO CANDIDATES

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

This paper consists of **2** printed pages. Please Turn Over



KIBU observes ZERO tolerance to examination cheating

QUESTION ONE (COMPULSORY) – 30 MARKS

- a. Differentiate between brake horse power and draft power as used in farm power (2marks).
- b. State and explain the two drives used in the Power Take off shaft(PTO) (4marks)
- c. A 4-cylinder engine has a bore of 77 mm, stroke of 60mm and a clearance volume of 20cc. Calculate
 - i. Compression ratio of the engine (4marks)
 - ii. Engine capacity.(2marks)
- d. Outline four daily service and maintenance practices carried out on the tractor engine.(4marks)
- e. Elaborate four advantages of mechanization (4marks)
- f. State the three forces that act on the tillage implement during cultivation. (3marks).
- g. Give four distinguishing characteristics between a moldboard plough and a disc plough (4marks)
- h. Enumerate three types of machinery used in planting (3marks)

QUESTION TWO – 20 MARKS

- a. With the aid of diagrams explain the principle of operation of a four-stroke cycle spark ignition engine of a tractor. (10 marks)
- b. Discuss five factors considered in the selection of draft animals (10marks)

QUESTION THREE – 20 MARKS

- a. Using a well labeled diagram explain the functions of the different parts of mould board plough(15 marks)
- b. Highlight any five care and maintenance practices to be carried out on disc plough implements(5marks)

QUESTION FOUR – 20 MARKS

- a. Explain the principle of operation of a carburetor with aid of illustrations. (8marks).
- b. Elaborate factors considered in the selection of the sources of power to be used on the farm (12 marks).

QUESTION FIVE – 20 MARKS

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