



(The University of choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR**

**YEAR TWO SECOND SEMESTER EXAMINATIONS
(Main examination)**

DIPLOMA IN AGRICULTURE, DIPLOMA IN HORTICULTURE

COURSE CODE: DAG 077

COURSE TITLE: FARM POWER AND MACHINERY

DATE: 26THApril, 2022

TIME: 3-5 PM

Instructions:

This paper consists of 5 questions

Section A is compulsory, Answer any 3 questions from Section B

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 3 Printed Pages. Please Turn Over.

SECTION A

Question One (25 marks)

- (a) Briefly discuss the sources of farm power used in farm operations
(6 marks)
- (b) With the aid of a diagram, define the following terms for a four-cylinder engine
- i. Firing order
 - ii. Four stroke (4 marks)
- (c) With the aid of a diagram, discuss the components of a mouldboard plough (4 marks)
- (d) Giving examples, distinguish between fixed costs and variable costs of agricultural machinery (4 marks)
- (e) Distinguish between a walking tractor and a 2WD tractor (3 marks)
- (f) Discuss the functions of the tractor hydraulic system (4 marks)

SECTION B (45 marks)

Question Two (15 marks)

- (a) Distinguish between primary and secondary cultivation (3 marks)
- (b) With the aid of diagrams, discuss the following
- i. Tandem harrow
 - ii. Offset harrow (4 marks)
- (c) Describe the two different methods by which tractor engines are cooled (4 marks)
- (d) Distinguish between manual and mechanised cane harvesting (4 marks)

Question Three (15 marks)

- (a) Briefly describe the configuration and the mode of action of the following implements in land preparation
- i. Mouldboard plough
 - ii. Disc plough
 - iii. Disc harrow (6 marks)

(b) Briefly describe the components and functioning of a boom sprayer
(5 marks)

(c) Distinguish between the splash and force feed methods of tractor engine lubrication
(4 marks)

Question Four (15 marks)

(a) Briefly describe the components and functioning sequence of a combine harvester, hence state how it can be customised for different grains
(7 marks)

(b) Highlight the typical routine maintenance procedures that should be performed for

- i. The farm tractor
- ii. Field machinery

(8 marks)

Question Five (15 marks)

(a) Describe the procedure of calibration of a row planter**(5 marks)**

(b) Outline the different methodologies in which tractor implements are hitched onto the tractor, and the respective implement type**(5 marks)**

(c) Briefly discuss the criteria that as a farm supervisor you would adopt in basic

- i. Machinery management
- ii. Machinery storage

(5 marks)

