



GWANDA STATE UNIVERSITY
FACULTY OF LIFE SCIENCES
DEPARTMENT OF ANIMAL SCIENCE
BACHELOR OF SCIENCE HONOURS DEGREE IN CROP SCIENCE
LCS 1205 MECHANISATION IN AGRICULTURE
SECOND SEMESTER FINAL EXAMINATION PAPER
JUNE/JULY 2019

This examination paper consists of 4 pages

Time Allowed: 3 hours
Total Marks: 100
Special Requirements: None
Examiner's Name: MR N. MATHEMA

INSTRUCTIONS

1. Answer **ALL** questions in Section A
2. Answer **only three** questions in Section B

MARK ALLOCATION

QUESTION	MARKS
SECTION A	40
SECTION B	60
TOTAL ATTAINABLE MARKS	100

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SECTION A: Answer ALL questions

Question 1.

- a) Define Mechanization (2)
- b) In the small scale/ rural as well as in the large scale Agricultural sectors, some tools are used to perform various Agricultural operations. Describe the three levels of complexity of agricultural machines for the Zimbabwean large scale and small holder sectors, giving examples for each category (18)

Question 2.

- a. Define power (2)
- b. Describe the sources of power at a Zimbabwean commercial mixed farm, clearly explaining the machinery which requires such power. (18)

Section B: Answer 3 (three) questions only

Question 3

- a. List the criteria that are used in the selection of animals used for draught/draft power (6)
- b. Describe the characteristics considered for the selection of draft/drought animals (14)

Question 4

Training of draught animals is of paramount importance in agriculture. Describe the principles of animal training that can be applied by a farmer in Zimbabwe. (20)

Question 5

Lubricating oil is vital for the efficient running of a mechanical engine.

- a. What is the purpose of lubricating oil in a tractor engine? (10)
- b. Describe the properties of a good lubricant (5)

When there is air in the diesel fuel system, the engine will not start.

- c. Describe how you would bleed an engine which failed to start due to air-lock (5)

Question 6

- a) Discuss the advantages and disadvantages of using disc and mouldboard ploughs under Zimbabwean conditions(15)
- b) Differentiate between primary and Secondary tillage (5)
- c) List any five parts of a mouldboard plough(5)

Question 7

- a) Describe the parts of a sprayer nozzle (5)

- b) Calculate the seed spacing required when planting maize in rows 90cm apart if the desired plant population is 50 000 per hectare and an average emergence rate of 90% is expected. (5)
- c) Determine the nozzle flow rate for a sprayer with nozzles spaced at 101,6cm if travel speed is 6.4 km/hour and the desired application rate is 235 L/ha. (4)
- d) The knapsack sprayer is the most used spray implement used by farmers in Zimbabwe. Describe how the implement is cleaned after use. (6)