



**UNIVERSITY OF SWAZILAND
SUPPLEMENTARY EXAMINATION PAPER**

PROGRAMME: BSC AGRIC EDUC 4, BSC AGRIC 4(APH)

COURSE CODE: LUM 401

TITLE OF PAPER: FIELD AND FARMSTEAD POWER

TIME ALLOWED: TWO (2) HOURS

SPECIAL MATERIAL REQUIRED: NONE

**INSTRUCTIONS: ANSWER QUESTION ONE AND ANY TWO
OTHER QUESTIONS.**

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GRANTED BY THE CHIEF INVIGILATOR**

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QUESTION 1

- (a) There are varied energy sources that can be used to accomplish field and farmstead tasks. Discuss **FOUR** factors that need to be considered when selecting an energy source.
(12 Marks)
- (b) Transport is a task that is critical for any farming operation. Briefly discuss **TWO** determinants for the mode of transport for farm produce.
(8 Marks)
- (c) Briefly discuss **TWO** characteristics of mechanical sources of power that make them not suitable for smallholder farming in developing countries.
(10 Marks)
- (d) Explain what is meant by “economies of scale” and how it would affect mechanisation.
(10 Marks)

QUESTION 2

- (a) There are a number of options to finance and/or to have access to farm machinery. Discuss **THREE** such options.
(15 Marks)
- (b) The capacity of field machinery is greatly influenced by field efficiency. Discuss any **THREE** methods of improving field efficiency, which would, in turn, improve field capacity.
(15 Marks)

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QUESTION 3

- (a) Define the following terms:
- (i) Drawbar power;
 - (ii) Coefficient of rolling resistance;
 - (iii) Indicated power;
 - (iv) Absorption dynamometer;
 - (v) Slip. (15 Marks)
- (b) Explain how the test for determining drawbar power is carried out by Nebraska tractor Testing Centre. (15 Marks)

QUESTION 4

- (a) It is agreed that inherent characteristics of smallholder farms limit the scope of their mechanisation. Discuss any **THREE** such characteristics. (15 Marks)
- (b) Define selective mechanisation and discuss **THREE** reasons justifying selective mechanisation. (15 Marks)

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