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UNIVERSITY OF SWAZILAND
RESIT EXAMINATION PAPER

PROGRAMME: BSc ABE 2

COURSE CODE: ABE202

TITLE OF PAPER: FARM MECHANISATION

TIME ALLOWED: TWO (2) HOURS

SPECIAL MATERIAL REQUIRED: NONE

INSTRUCTIONS: ANSWER QUESTION ONE AND ANY TWO OTHER QUESTIONS.

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CHIEF INVIGILATOR

SECTION 1: COMPULSORY

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QUESTION 1

- a. With the aid of a diagram, explain the effect of soil moisture content on soil strength.
[10 marks]
- b. Discuss the implications of soil moisture content on tillage operations. **[10 marks]**
- c. Distinguish between conventional and conservation tillage. **[10 marks]**
- d. Explain why disc ploughs are preferred to moldboard ploughs in tropical countries.
[10 marks]

SECTION 2: ANSWER ANY TWO (2) QUESTIONS**QUESTION 2**

- a. In a sprayer calibration exercise, 15 litres of water was collected from 20 nozzles spaced 50 cm apart when the tractor was operating at a speed of 3 km/h and had covered a distance of 150 m.
- i. What is the discharge from each nozzle in litres per minute? **[5 marks]**
- ii. What is the application rate? **[5 marks]**
- b. Discuss the five methods of planting **[20 marks]**

QUESTION 3

- a. Discuss any five constraints that prohibit the widespread use of farm machines in Swaziland. **[15 marks]**
- b. Machine performance is critical in the management of farm machinery. Field efficiency is one of the major factors used to determine machine performance. Discuss any three (3) ways of improving field efficiency of farm machines.
[15 marks]

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QUESTION 4

- a. Distinguish between implements, equipment and machines as used in farm mechanization terminology. **[9 marks]**
- b. Name any six (6) objectives of tillage. **[12 marks]**
- c. The reaction of soil to forces applied by tillage tools depend on the following properties: shear strength of the soil, adhesive properties of the soil and frictional characteristics of the soil. What are the effects of these factors on tillage? **[9 marks]**