



**UNIVERSITY OF SWAZILAND  
SUPPLEMENTARY EXAMINATION PAPER**

**PROGRAMME: BSC ABE. II**

**COURSE CODE: ABE 205**

**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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GRANTED BY THE CHIEF INVIGILATOR**

SECTION I COMPULSORY

QUESTION 1

- a) Distinguish between the terms 'implement' and 'machine' as definitions for tools of agriculture. [5 marks]
- b) Figure 1 shows the parts of an ox-drawn plough.

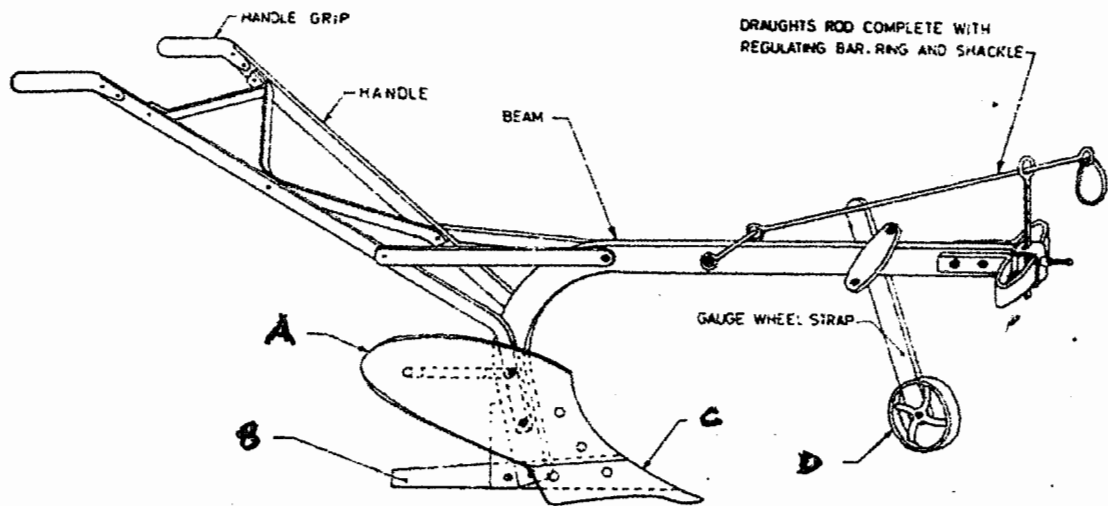


Figure 1 Ox-drawn mouldboard plough

- i. Name the parts labelled A, B, C and D [3 marks]
  - ii. What are the functions of the parts listed in i. above? [6 marks]
  - iii. Describe how an operator would adjust the ploughing depth during tillage operations? [6 marks]
- c) Mouldboard ploughs are very popular with farmers on the Swazi Nation Land. State any five likely reasons for the preference of mouldboard ploughs over disc ploughs by farmers on Swazi Nation Land. [10 marks]
- a) List the time elements considered when computing the time efficiency of the use of a machine. [10 marks]

**SECTION II – ANSWER ANY TWO QUESTIONS****QUESTION 2**

- a) How does the use of planting equipment influence seed germination and seedling emergency? [6 marks]
- b) Distinguish between a broadcaster, a seed drill and a precision planter. [9 marks]
- c) Disc harrows are used in conservation tillage. What is their role during field operations in minimum tillage? [6 marks]
- d) During the static calibration of a two row planter, the following results were obtained after collecting data from both seed hoppers;

Measurement	value
Diameter of wheel	40 cm
Row width	90 cm
Number of wheel turns	50
Amount of maize collected	10 kg

Determine the amount of seed that the farmer must buy to plant in a three hectare field.

[9 marks]

**QUESTION 3**

Figure 2 shows secondary tillage implements used in multi-tasking tillage operations.

- a) Name the implements involved in the multi-tasking [6 marks]
- b) What is achieved at each multi-tasking? [8 marks]

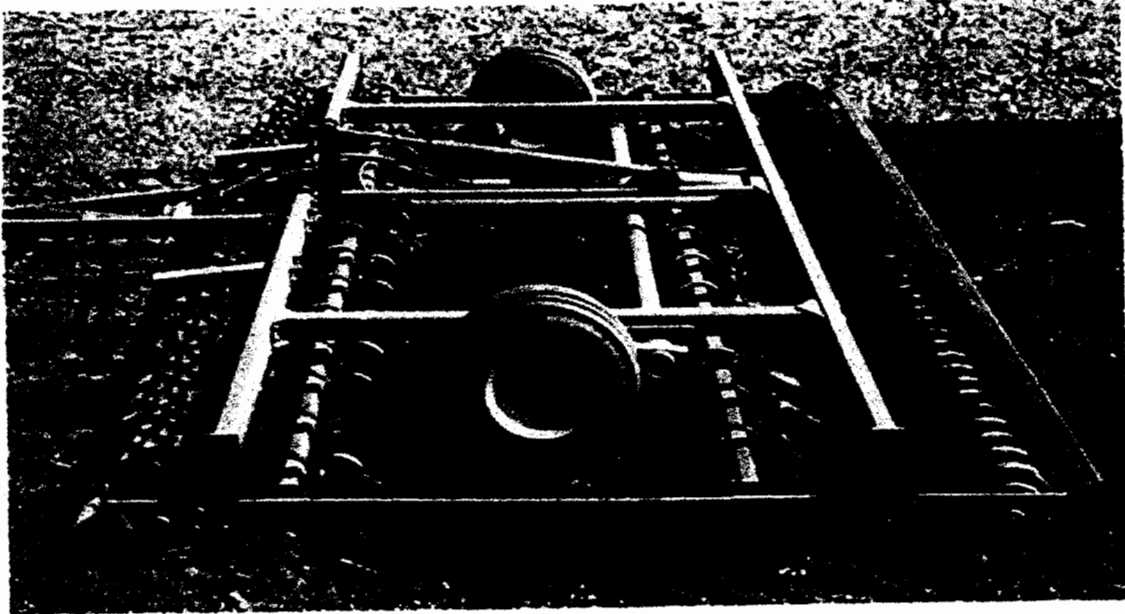


Figure 2 Secondary tillage multi-tasking operations.

- c) What are the three major groups of hazards that plants must be protected from in order to grow and yield optimally? [6 marks]
- d) What factors affect the application rate of granular applicators of farm chemicals in the field? [10 marks]

#### QUESTION 4

- a) What are the key components of a sprayer? [10 marks]
- b) Explain a procedure one would use to calibrate a knapsack sprayer. [11 marks]
- c) What parameters affect the application rate of chemicals during spraying? [9 marks]