



**UNIVERSITY OF SWAZILAND
SUPPLEMENTARY EXAMINATION PAPER**

**PROGRAMME: BSC AGRIC ECON. AGBMGT. II
BSC AGRIC EDUC. II
BSC AGRIC AGRON. II
BSC ANI. SC. II
BSC ANI. SC. (DAIRY) II
BSC HORT. II**

COURSE CODE: ABE 210

TITLE OF PAPER: PRINCIPLES OF FARM MECHANISATION

TIME ALLOWED: TWO (2) HOURS

SPECIAL MATERIAL REQUIRED: NONE

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

**DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN
GRANTED BY THE CHIEF INVIGILATOR**

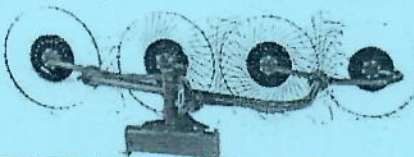
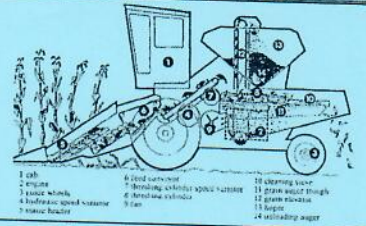

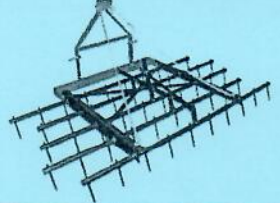


CANDIDATE NUMBER _____

SECTION I COMPULSORY

QUESTION 1

- a) Fill in the missing information in Table 1 and submit the sheet. The first one has been done as an example. [10 marks]

Table 1 Farming equipment and their uses.

	Picture	Name of equipment	Farming process
0		Windrow rake	Harvesting
1			
2			
3			
4			
5			

- b) Figure 1 shows the parts of an ox-drawn plough.

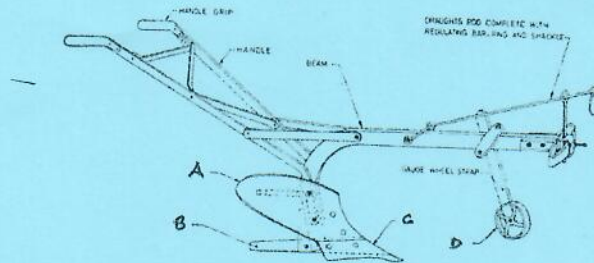


Figure 1 Ox-drawn mouldboard plough

- i. Name the parts labelled A, B, C and D [4 marks]
 - ii. What are the functions of the parts listed in i. above? [8 marks]
 - iii. Describe how an operator would adjust the ploughing depth during tillage operations? [6 marks]
- c) Biomass energy production is considered renewable energy because it is carbon neutral.
- i) What is meant by “carbon neutral”? [2 marks]
 - ii) Explain how the carbon neutrality is achieved. [4 marks]
 - iii) Name the possible sources of biomass for energy production in Swaziland. [6 marks]

SECTION II – ANSWER ANY TWO QUESTIONS

QUESTION 2

- a) Distinguish between implements, equipment and machines as used in farm mechanization terminology. [9 marks]
- b) Figure 2 shows solar powered pumping system for water supply at an agricultural farm in rural Swaziland.
- Is the energy source renewable or non-renewable? [2 marks]
 - Give reason(s) for your answer. [3 marks]
 - State all the energy forms that take place starting from the solar panel to the water storage tank. [5 marks]

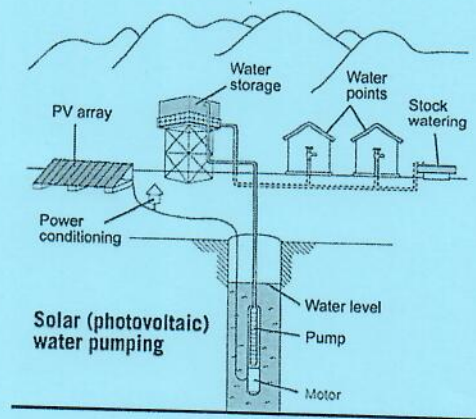


Figure 2 A solar water pumping system

- c) What are the advantages and disadvantages of conservation tillage? [11 marks]

QUESTION 3

- a) Explain the threats to plants that make it necessary to apply plant protection measures. [9 marks]
- b) What are the key components of a sprayer? [10 marks]
- c) Determine the application rate (in litres per hectare) of a boom sprayer that has a nozzle spacing of 50 cm on an 9 m boom. The sprayer is being driven at 5 kmph and the nozzle discharge is 0.02 litres per second. [11 marks]

QUESTION 4

- a) What are the two steps used in the selection of draught power animals? [4 marks]
- b) Distinguish between the steps given in a) above. [6 marks]
- c) Which animal breed is suitable for use in Swaziland as a draught animal power? [2 marks]
- d) Support your choice of answer in c) with reasons. [18 marks]