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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.

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SECTION I   COMPULSORY

QUESTION 1

a)   Traditionally, farmers in the southern African region have used solar energy as a source of energy. List the processes for which solar energy has been used in agriculture in any country of your choice

[10 marks]

a)   Distinguish between implements, equipment and machines as used in farm mechanization terminology.   [12 marks]

b)   A three bottom plough is to be attached to a tractor before setting out to the field. The width of cut per bottom is 45 cm.

   (i)   What is the importance of knowing the centre of load of the plough?

[8 marks]

   (ii)   Calculate the centre of load from the ploughed furrow

[10 marks]

SECTION II – ANSWER ANY TWO QUESTIONS

QUESTION 2

a)   Briefly outline the operations involved in conventional tillage.

[10 marks]

b)   Name any five objectives of tillage.

[10 marks]

c)   Discuss the advantages of using disc ploughs in arid and semi-arid areas of tropical and subtropical regions of Africa?

[10 marks]

QUESTION 3

a)   Explain
      (i)   The major objectives of plant protection;

                                                              [6 marks]

      (ii)   The pros and cons of Ultra Low Volume (ULV) sprayers in
                Swaziland;

                                                              [9 marks]

b)   Determine the application rate (in litres per hectare) of a boom sprayer
      that is has a nozzle spacing of 50 cm on an 18 m boom. The sprayer is
      being driven at 8 kph and the nozzle discharge is 0.02 ml per second.

                                                              [15 marks]

QUESTION 4

a)   It is important to routinely calibrate farm equipment. What are the
      benefits of calibrating farm equipment?

                                                              [5 marks]

b)   Explain the procedure of stationary calibration of a maize planter.

                                                              [15 marks]

c)   A planter drops seeds at 200 points in a row of 50 m. Calculate the
      plant population if a row spacing of 90 cm is expected.

                                                              [10 marks]