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UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DIPLOMA IN AGRICULTURAL EDUCATION

AGEN 0232: INTRODUCTION TO AGRICULTURAL FIELD MACHINES

STREAMS: DIP.AGED Y2S2

TIME:2 HOURS

DAY/DATE: THURSDAY 13/04/2023

11.30 A.M. –1. 30 P.M.

INSTRUCTIONS

- This paper contains seven questions
- Answer all questions in section A and any other two questions in section B

SECTION A (40 marks)

QUESTION ONE

Discuss five objectives for mechanizing agriculture (10 marks)

QUESTION TWO

Discuss the following forces encountered in soil tillage:

- a) Draught (2 marks)
- b) Side draught (2 marks)
- c) Drawbar power (2 marks)
- d) Scouring (2 marks)
- e) Torque (2 marks)

QUESTION THREE

a) Explain the function of the following parts of a mouldboard plough.

- i. Share (3 marks)
- ii. Mouldboard (3 marks)
- iii. Landside (3 marks)

- iv. Side suction (3 marks)

QUESTION FOUR

Discuss five soil conditions where a disc plough works better than a mouldboard plough. (8 marks)

SECTION B

QUESTION FIVE

- a) Explain four functions of a seed planter (8 marks)
- b) Describe the term “Calibration” as applied in seed planting machines (2 marks)
- c) With the aid of a diagram name the basic parts of a row crop planter (5 marks)

QUESTION SIX

- a) A farmer is using a grain drill to plant wheat. The grain drill has twenty rows spaced at 20 centimeter, and the drive wheels have a diameter of 350 centimeters. In a calibration exercise, the drive wheel is turned 50 turns and 4.5 kilograms of wheat seed are collected during the 50 turns of the drive wheel. Determine the seedling rate in kilograms per hectare of this grain drill. (6 marks)
- b) Describe five classifications of chemical sprays (5 marks)
- c) Discuss four factors that affect chemical drift (4 marks)

QUESTION SEVEN

- a) A combine harvester has a 5 meter width and moves at a speed of 1.5 Meters per second. In one minute 400 kilograms of materials enter the header and of this amount 180 kilograms enter the grain tank. The remaining 220 kilograms of material is discharged through the combined onto the field. Determine the following for this combine harvester:
- i. Field capacity (2 marks)
 - ii. Material capacity (2 marks)
 - iii. Through put capacity (2 marks)
- b) Discuss two possible causes of excessive amounts of unthreshed seed in the grain tank. (4 marks)
- c) Describe three adjustments made on a forage harvester to change theoretical length of cut materials (3 marks)
- d) Name four machines used in making hay (2 marks)