

The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Agricultural & Plantation Engineering



Study Programme	: Bachelor of Industrial Studies Honors
Name of the Examination	: Final Examination
Course code and Title	: AGI3450 Land and Soil Tillage Management
Academic year	: 2021/2022
Date	: 13 February 2023
Time	: 0930 – 1230hrs
Duration	: 3 hours

Registration Number Index Number.....

Instructions

1. Contain SIX (06) essay type questions. You are required to answer **ONLY FOUR (04) questions**. You may spend about **two hours** to answer the questions in this section. Answer for each question should commence from a new page.
2. Read the questions carefully before answering.
3. **Please note that you should write your registration number and index number in the space provided above. Do not write your name.**

SECTION 2

1. Briefly explain the biological properties of soil on plant growth and development (25 mark)

2.a. How porosity varies with different soil types? (10 mark)

b. In a soil profile, one cubic centimeter contains solids and pore spaces and the whole 1.0 cm^3 has a mass of 1.32g:



Calculate the bulk density of it. (5 mark)

c. If above soil profile, all the solids were compressed to the bottom,



Calculate the particle density of it. (5 mark)

d. Using the answers of a and b, calculate the particle density of the soil (5 mark)

3. a. Describe the methods available to identify the compacted soil (10 mark)

b. Briefly describe the factors influence on soil compaction (15 mark)

4. Briefly explain the land reclamation methods that you can practices to convert lands with saline and sodic soils in to a productive agricultural lands (25 marks)

5.a. Describe the benefits of land levelling, and how it effect on Agriculture? (10 mark)

b. The data from a survey are shown below. Use rise and fall method to reduce the data.

Use arithmetic checks to support your answer. (15 mark)

Station	Point	B.S	I.S	F.S	Rise	Fall	R.L	Remarks
1	TBM	0.771						
1,2	A	0.802		1.552				
2	B		2.311					
2,3	C	3.580		1.990				
3	D		1.220					
3	E		3.675					
3,4	F	2.408		4.02				
4	G		0.339					
4	H			0.157				

6. Write short note on following. (25 mark)

a. Conservation tillage

b. Importance of seed transplanting

c. Soil bulk strength

d. Process of nitrification involves in the nitrogen cycle