

EASTERN UNIVERSITY, SRI LANKA
SECOND YEAR FIRST SEMESTER EXAMINATION IN AGRICULTURE - 2001/2002
ACH 2101 SOIL PHYSICAL PROPERTIES

Answer all questions.

Time allowed : 3 Hrs.

Answers should be written in English.

1. a. Define the term soil consistence.
b. What are the three moisture levels used to describe the consistence of the soil.
c. Briefly describe the soil consistence at moist level.

2. a. Briefly explain the mechanism of gaseous exchange in soil.
b. Proof the followings.

- i. $E = 1 - \rho_b / \rho_p$
- ii. $e = E / (1 - E)$

where,

e	-	Void Ratio
E	-	Total porosity of soil
ρ_b	-	Bulk density of soil
ρ_p	-	Particle density of soil

3. a. Describe the factors affecting the Atterberg's Limits of a soil.
b. A core soil sample with 10cm diameter and 7cm height having a fresh (wet) mass of 1500g. The fresh weight was reduced by 1/5 after drying in an oven. Assume the particle density of soil is 2.65 g/cm³ and calculate the following,

- i. Bulk density of soil.
- ii. Total porosity of soil.
- iii. Void ratio.
- iv. Degree of saturation.
- v. Air filled porosity.

4. Write notes on the following.

- a. Aggregate formation and its stability.
- b. Soil temperature and the factors affecting it.

5. a. Write a brief account on various forms of water in soils.

- b. Illustrate the factors influence the water holding capacity of soil.

6. a. Briefly explain the importance of soil structural management in relation to agriculture.
b. Discuss the effect of texture and structure on pore space distribution.
