EASTERN UNIVERSITY, SRI LANKA
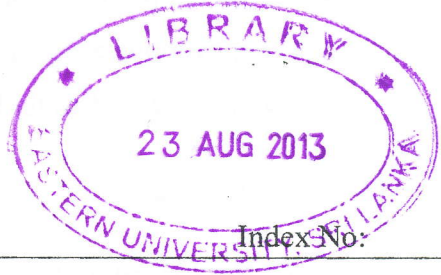
IRD YEAR SECOND SEMESTER EXAMINATION IN AGRICULTURE- 2005/2006

(Feb/March, 2013)

AEN 3201 WATER MANAGEMENT TECHNIQUES AND METEOROLOGY

(External Degree)

Practical Examination

:r **all** questions

Index No:

Two hours

(a) Briefly explain the procedure to determine the soil bulk density using soil core sampler.

(b) How can you determine the moisture content of soil by Gravimetric method? Explain.

(c) Calculate the soil water content on dry weight basis for a crop field just before irrigation, when the fresh soil sample in an aluminium container weighs 82.85 g, which on oven drying at 105 ^{0}C weighs 76.49 g. The weight of the empty container is 32.55 g.

(a) Give the procedures for determining Field Capacity (FC) of a soil in a field.

(b) Find out the available water capacity in centimetre per meter depth of a soil when field capacity and permanent wilting point of the soil are 22.5 % and 11.7 % (weight basis) respectively. Bulk density of the soil is 1.58 g/cm^3.

(a) Give the site selection criteria to establish a new Agro- meteorological station.

(b) Briefly describe the meteorological instruments used to measure the elements of weather.

04. (a) What do you understand by project irrigation efficiency? Specify its components.

(b) An area of 25 ha of crop will be irrigated by a pump working 10 hours a day. It is desired at 50 % of soil water depletion. The available water holding capacity soil is 20 cm per meter depth of soil. The depth of root zone is 75 cm. The con and application efficiencies are 75 % and 80 % respectively. The mea consumptive use of water by the crop (ET_{crop}) is 5 mm per day.

Find the following;

   (i) Net Irrigation Requirement

   (ii) Gross Irrigation Requirement

   (iii) Irrigation Period

   (iv) Required capacity (flow rate) of the irrigation system.

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