**EASTERN UNIVERSITY, SRI LANKA**
**SECOND YEAR SECOND SEMESTER EXAMINATION IN AGRICULTURE -2013/2014**
**(September 2015)**

**AEN 2201 – IRRIGATION AND WATER MANAGEMENT (3:30/30)**
**(Practical written examination)**

Answer all questions
Time: 2 hours

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01. (a) Explain Gravimetric method of soil moisture determination.

(b) How will you determine the bulk density of soil? Explain.

(c) Using the following data, find out the water content of a soil on weight and volume basis taken just before irrigation. The gravimetric method is followed for the determination of the water content. Weight of empty Aluminium (Al) box = 35.25 gm; Weight of Al box + fresh soil sample = 95.33 gm; Weight of Al box + oven dry soil sample =55.12 gm; bulk density of soil 1.54gm/cc.

02. (a) State the formula for computing discharge through the following water measuring structures

(i) Trapezoidal weir

(ii) Rectangular weir

(iii)Orifice

(b) Illustrate the cross section of a trapezoidal canal

(c) What are the factors considered during the installation of rectangular weir and the measurement of irrigation water through that weir?

(d) Trapezoidal weir is installed at a particular paddy field to measure the discharge of irrigation water. Calculate the discharge using following data;

Length of the crest 60cm, height of the crest from the channel bed is 20 cm, height of water flowing over the crest is 10 cm. The side slope of the weir is 1:2.

(PTO)

03. (a) Discuss the factors considered during the selection of irrigation methods.

(b) Determine the application efficiency of a border irrigation using the following data.

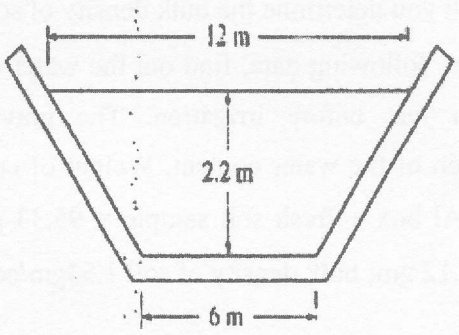
Available moisture = 12.5cm/m, Root zone depth = 1.8m

Depletion level = 50%, Length of border strip = 250m

Width of border = 6.5m, Duration of irrigation = 1.5 hrs

Size of irrigation stream = 35lit/sec

04. (a) Calculate the discharge through the trapezoidal shaped masonry canal using velocity area method (required data given below)




Bottom width of the canal = 6m, Top width of the water level = 12 m

Depth of water in the canal = 2.2 m, Slope of the canal = 0.01feet per foot

Manning's Roughness coefficient (n) = 0.025

(b) Explain or describe the soil moisture constants and soil water using the following figure.