



EASTERN UNIVERSITY, SRI LANKA  
SECOND YEAR SECOND SEMESTER EXAMINATION IN AGRICULTURE- 2005/06  
(April/May 2010)  
AEN 2201 - IRRIGATION WATER MANAGEMENT (2:30/00)  
(External Degree)

Answer all questions.  
Time: Two hours

01. (a) What do you understand by the following terms.
- i. Hygroscopic water
  - ii. Dry bulk density
  - iii. Readily available water
- (b) (i) Calculate bulk density, water content on weight basis and water content on volume basis of a soil when soil core of 12 cm diameter and 10 cm length weighs 1223.5 g immediately after sampling and 992.3g after oven drying at 105°C.
- (ii) Calculate the total porosity of a soil when particle density is 2.45g/cm<sup>3</sup> and the bulk density of soil is 1.43g/cm<sup>3</sup>.
- (iii) A crop with a root depth of 1.5 m growing in a clay loam with an available moisture capacity of 110 mm/m. If the depletion level is 65%, calculate the readily available water to that crop.
02. (a) What do you mean by the term 'basic infiltration rate'?
- (b) Briefly discuss the factors affecting the infiltration rate.
  - (c) Give the steps involved in the calculation of crop evapotranspiration (ET<sub>c</sub>).
  - (d) An irrigation pump discharges water at the rate of 10,400 litres per hour and works seven hours each day. Estimate the area commanded by the water lift if the average depth of irrigation is 6cm and irrigation period is 14 days.

(PTO)

03. Write short notes

- a. Criteria for evaluation of irrigation water.
- b. Causes of water logging and development of high water table.
- c. Irrigation efficiencies.

04. (a) State the importance of the wetting pattern of different soil types and explain the causes for poor wetting pattern during irrigation.

(b) Briefly discuss the advantages and disadvantages of the surface irrigation method.

(c) Discuss the factors that determine the method of irrigation.

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