



The Open University of Sri Lanka
Faculty of Engineering Technology
Diploma/Degree in Technology and Industrial Studies
(Agriculture)

Final Examination- 2008/2009

AEX4237 Irrigation and Drainage Engineering

Date : ~~28-03-2007~~
Time : 0930-1230 hours

SECTION II

- (1) (a) Define the following terms: crop period, duty of a crop, consumptive use, evapotranspiration and effective rain fall.
- (b) "Operation and maintenance of irrigation projects is considered as an integral component of the irrigation development".
Discuss the above statement in relation to efficiency of irrigation water distribution and management, productivity of agriculture and sustainability of physical irrigation systems.
- (2) (a) Explain the importance of geology and rock foundation of the area for selection of sites for dams.
- (b) What are the factors to be considered in land grading?
- (3) (a) Discuss the water control and measuring structures in canals.
- (b) An irrigation canal is constructed in sandy clay soils where the Manning's roughness coefficient is 0.28 and the mean bed slope is 0.007. Assume that the canal has side slopes are 1.4 horizontal to 1 vertical. If the maximum depth of flow allowed is 1.6m and the bed width of the canal is 1.8m, determine the maximum flow rate that can be conveyed in this canal.
- (4) (a) What are the basic methods of irrigation and explain briefly?
- (b) Compare advantages and disadvantages of each method mentioned above.

- (c) Calculate the scheme of water requirement in April for 35 ha farm growing the following crops.

Crop	Area (ha)	Crop water requirement in April (mm/d)
Maize	15	5.4
Vegetable	10	5.0
Banana	10	4.3

Assume that water application efficiency is 65% conveyance efficiency is 70%. Irrigation only takes place for 14 hrs each day and 5 days each week.

- (5) Write an essay on "The decline of the irrigation civilization in ancient Sri Lanka.
- (6) Write short notes on any three (03) of the followings.
- Effect of irrigation on environment.
 - Development of irrigation systems and public health.
 - Types of spillways.
 - Factors affecting the site selection of Dams.