



The Open University of Sri Lanka  
 Faculty of Engineering Technology  
 Industrial Studies & Technology (Engineering)  
 Programme of Study  
 Final Examination – 2014/2015  
**AEX4237 Irrigation and Drainage  
 Engineering**

**Date : 01-09-2015**

**Time : 9.30 – 12.30**

**Duration: Three (03) hours**

**SECTION II** : Answer any **four** (04) questions. All questions carry equal marks.

- (1) (a) Differentiate between reference evapotranspiration ( $ET_0$ ) and crop evapotranspiration ( $ET_c$ ).  
 (b) Discuss direct methods to estimate evapotranspiration.  
 (c) When  $p=0.29$  and mean daily temperature is  $21.5^\circ\text{C}$ , calculate the reference evapotranspiration ( $ET_0$ ) in mm/day using Blaney-Criddle method.
- (2) (a) State the importance of making an irrigation schedule.  
 (b) Define the following terms regarding an irrigation system.  
 i. Application Efficiency ( $E_a$ )  
 ii. Conveyance efficiency ( $E_c$ )  
 iii. Project efficiency ( $E_p$ )  
 (c) Write a short note on drip irrigation system.
- (3) (a) List the basic knowledge needed for the alignment of canals.  
 (b) Discuss the water control and measuring structures in canals.  
 (c) The discharge of a pipe turnout is  $0.58\text{ m}^3/\text{s}$ . The bed level is  $25.50\text{ m}$  and the full supply depth is  $3.35\text{ m}$ . In a tail canal the Full Supply Depth (FSD) is  $0.46\text{ m}$ . The bed width is  $3.56\text{ m}$  and free board is  $0.43\text{ m}$ . The turnout pipe diameter is  $0.78\text{ m}$  and Manning's  $n$  is  $0.015$ . The pipe length is  $15.15\text{ m}$ .  
 Calculate  
 i) The velocity through the pipe  
 ii) Maximum Allowable Velocity (MAV)  
 iii) Friction loss of the pipe

- (4) (a) King Parakramabahu I was considered as the greatest ruler in Polonnaruwa era. What are the great irrigation works by him?  
(b) 'Ancient Engineers are good technological and technical inventors' critically evaluate this statement.  
(c) State the functions of irrigation department in Sri Lanka.
- (5) (a) Discuss briefly the drainage problems in Sri Lanka?  
(b) Write a short essay on importance of maintaining a drainage system for its sustainability.  
(c) What type of information is needed for better maintenance of a drainage system?
- (6) Write short notes on any **three** (03) of the following.  
(a) Decline of the irrigation civilization in ancient Sri Lanka  
(b) Gross Irrigation Requirement  
(c) 'System A' management structure  
(d) Class A Open Pan

End of paper