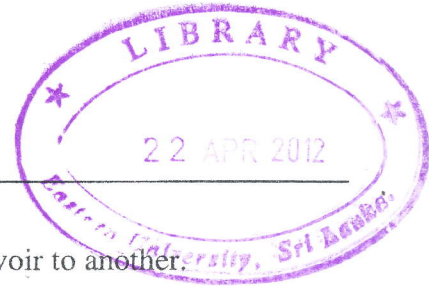


**EASTERN UNIVERSITY SRILANKA**  
**FIRST YEAR SECOND SEMESTER EXAMINATION IN AGRICULTURE 2009/2010**  
**(Jan/Feb/March 2012)**  
**AE 1201 - ENGINEERING HYDROLOGY AND HYDRAULICS (2:30/00/60)**

Answer all questions  
Time : 2 hours



01. (a) Derive the equation for pipe discharging water from one reservoir to another.
- (b) A pump delivers a flow of  $0.0157 \text{ m}^3/\text{s}$  of water from one reservoir to another whose surface level is 30.5 m above the first. The pipe diameter is 150 mm for a length of 1.2 km and changes to a diameter of 100 mm for the remaining length of 0.4 km. The resistance coefficient is 0.009. (Neglect degradation other than that due to pipe friction). Find the power required to drive the pump if it has an efficiency of 0.7
02. (a) Discuss about the measurement of infiltration.
- (b) A complete dam of trapezoidal having water on vertical phase is 28 m height. Base of the dam is 10 m wide and top is 4 m wide. Find the resultant thrust on the base per meter length of dam and point where it cuts the base. (Specific weight of masonry  $2400 \text{ kgm}^{-3}$ ) Water level coinciding with the top of the dam.
03. (a) Discuss the divisions and uses of Hydrograph.
- (b) List out the base flow separation methods.
- (c) Explain the Current meter and its measurement techniques in stream flow measurement.
04. (a) Briefly describe the factors affecting Runoff.
- (b) Using the Chezy formula, find the proportions of a trapezoidal channel which will make the discharge a maximum for a given area. Show that the sides and the base of such section are tangential to a semi circle whose centre is at the water surface.
- (c) A canal is rectangular in cross section and conveys  $21.3 \text{ m}^3/\text{s}$  of water with a velocity of 2.4 m/s. Find the gradient required if the proportions are those for maximum discharge.
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