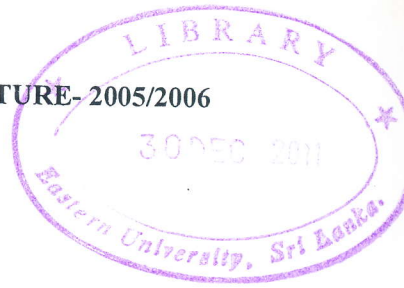


EASTERN UNIVERSITY, SRI LANKA

THIRD YEAR FIRST SEMESTER EXAMINATION IN AGRICULTURE- 2005/2006

(March/April/May 2011)

AEN 3101 Hydraulics and Hydrology (2:30/00)



Answer all questions

Time allowed: Two hours

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1.
    - a. What do you understand by the terms 'Precipitation' and 'Adiabatic cooling'?
    - b. Briefly discuss about the types of precipitation based on adiabatic cooling.
    - c. Describe the Thiessen polygon method to estimate rainfall.
  
  2.
    - a. What is hydrograph?
    - b. Illustrate and define the components of a typical hydrograph
    - c. Give the measurement procedure of stream flow.
    - d. Briefly discuss the factors affecting the infiltration.
  
  3.
    - a. Derive an equation for total pressure on an inclined surface immersed in water at an angle  $\theta$  by using the first principles.
    - b. A triangular plate is vertically immersed in water with its base above and it is parallel to the free surface of water. The base is  $4m$  long and  $5m$  below the water surface. The vertex of the plate is  $8m$  from the water surface. Calculate the total pressure on the vertical surface.
  
  4.
    - a. Distinguish between laminar flow and turbulent flow
    - b. An inverted U-tube acts as a siphon. It has one end immersed in water in a tank and the other end is free to discharge to atmosphere. The free end is  $3.5m$  beneath the top end of the siphon, which is  $3m$  above the free surface of the water in the tank. If the tube forming the siphon is of uniform bore and energy degradation due to friction is negligible, determine,
      - (a) the velocity of the water
      - (b) the pressure at the top of the siphon.
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