

EASTERN UNIVERSITY, SRI LANKA

LIB THIRD YEAR FIRST SEMESTER EXAMINATION IN AGRICULTURE- 2012/2013

(Aug/Sept-2014)

AEN 3101- HYDRAULICS AND HYDROLOGY

30 SEP 2014

(REPEAT)

Time: Two hours

Answer all questions

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1. (a) Briefly describe the divisions of hydrograph with suitable diagram.  
  
(b) A rectangular plate with dimensions of 3 m  $\times$  5 m is vertically immersed in water in such a way that its 5 m side is parallel to the water surface. The distance between water surface and nearest parallel side of the plate is 3 m. Calculate the total pressure and centre of pressure (Assume the specific weight of water is 1000 kg/m<sup>3</sup>).
  
2. (a) What are the stages of hydrological cycle?  
  
(b) Briefly explain the following;
  - i. Convictional precipitation
  - ii. Orographic precipitation  
(c) Briefly describe the factors affecting runoff hydrograph.
  
3. (a) List the factors affecting runoff.  
  
(b) Define the term *infiltration capacity*.  
  
(c) Briefly describe the factors affecting infiltration capacity of soil.
  
4. (a) Define the following terms;
  - i. Evaporation
  - ii. Throughfall
  - iii. Stem flow

*Please Turn Over*

(b) How do you measure stream flow rate using area velocity method?

(c) A pipeline gradually varies in diameter from 15 cm at A to 7.5 cm at B as shown in the figure. The point A is 6 m above the datum while B is 3 m above the datum. The velocity at A is 3.6 m/s. If the pressure at A is  $1 \text{ kg/cm}^2$  determine pressure at B. Neglect the energy degradation.

