EASTERN UNIVERSITY, SRI LANKA

THIRD YEAR FIRST SEMESTER EXAMINATION IN AGRICULTURE- 2011/2012

(Jan/Feb-2014)

AEN 3101- HYDRAULICS AND HYDROLOGY

(REPEAT)

Time: Two hours
Answer all questions

1. (a) Briefly describe the factors affecting infiltration capacity of soil.

   (b) A rectangular plate has 2 m × 3 m dimensions vertically immersed in water in such a way that its 3 m side is parallel to the water surface. The distance between water surface and nearest parallel side of the plate is 6 m. Calculate the total pressure and centre of pressure (Assume the specific weight (ω) of water is 1000 kg/m^3).

2. (a) List the factors affecting runoff.

   (b) Briefly explain the following;

   i. Convectional precipitation
   ii. Orographic precipitation

   (c) Briefly describe the components of hydrograph.

3. (a) What are the stages of hydrological cycle?

   (b) Find the proportions of a rectangular channel of depth D and width B which will make maximum discharge for a given cross sectional area (Use the Chezy's formula).

   (c) A rectangular canal is designed for its maximum discharge and conveys water with the velocity of 1.9 m/s. If the rate of flow is 12.5m^3/s, find the required gradient (Chezy's constant, C= 49).

Please Turn Over

4. (a) What do you understand by the following terms in relation to interception;

   i. Evaporation
   ii. Throughfall
   iii. Stem flow

   (b) The complete dam of trapezoidal is having 18 m height of water on vertical phase. Base of the dam is 10 m and top is 4 m. Find the resultant thrust on the base per 1m length of the dam and point where it cuts the base. (Weight of masonry is 2400kg/m^3 and water level coinciding with the top of dam). Assume specific weight of the water is 1000kg/m^3.
