

EASTERN UNIVERSITY, SRILANKA

FIRST YEAR SECOND SEMESTER EXAMINATION IN AGRICULTURE 2012/2013

(June/July 2015)

AE 1201 - ENGINEERING HYDROLOGY AND HYDRAULICS (2:30/00/60)

(Proper/Repeat)

Answer all questions

Time: 2 hours

01. (a) Illustrate and explain the hydrological cycle.

(b) Briefly discuss about the rainfall types.

(c) Briefly discuss the factors affecting the infiltration rate of a soil.

02. (a) Why do we need to measure the rainfall?

(b) What are the methods available to estimate the average rainfall for a particular area?

(c) Find the average rainfall using following data.

Polygon	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Area (km ²)	15.5	45.4	38.2	58	36.7	33.1	33.1	1.8	23	23	2.88	33.1	27	20.2	9.72
Rainfall (Inch)	0.9	1.5	2.8	1.8	2.2	3.1	3.9	3	3.8	4.1	2.1	2.9	3	1.8	3.1

03. A trapezoidal channel has a side slope of 2 vertical to 3 horizontal. It carries 21 m³ of water per second. If the gradient of the channel is 1 in 1000, design the channel for its best form. Use Manning's formula, taking $N = 0.01$.

(PTO)

04. Water is discharging from a tank through a convergent-divergent mouthpiece. The exit from the tank is rounded so that losses there may be neglected and the minimum diameter is 0.05m. The head in the tank above the centre-line of the mouthpiece is 1.83m.

- What is the discharge?
- What must be the diameter at the exit if the absolute pressure at the minimum area is to be 2.44m of water?
- What would the discharge be if the divergent part of the mouth piece is removed? (Assume atmospheric pressure is 10m of water).

