Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Science and Technology
300 Level 2nd Semester Examination – Dec. 2017/ Jan. 2018

Uva Wellassa University

MRT 351-1 Hydrology

Instructions to candidates
Duration: One (01) hour
Number of questions: Two (02) Essay
Answer all questions
Mark allocation: 100 Mark

1. The observed outflows in a stream from a watershed of 1.17 km^2 due to a storm of 3-hour duration are given in the table.

Time	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.
Flow (m^3/hour)	15	30	50	80	65	45	15

a. Determine the equivalent depth of direct runoff. (05 mark)

b. Derive the 3-hour unit hydrograph. (05 mark)

c. What will be the outflow hydrograph for **2-hour** storms of 14 mm and 7 mm started at 3 a.m. and 6 a.m. respectively? (45 mark)

d. Derive the 4-hour unit hydrograph using lagging storm method. (10 mark)

(State assumptions you made in solving this problem)

2. Mean Annual Rainfall values in mm for Monaragala from year 1993 to 2016 are 1985, 1830, 1740, 1800, 2075, 2120, 1575, 2090, 2150, 1660, 1515, 1780, 2075, 2100, 1985, 2140, 1985, 2075, 1680, 1610, 1985, 1740, 1950 and 1740 respectively.

a. Determine the 75% probability rainfall value in mm. (15 mark)

b. What is the rainfall value in mm that occurs once in 4 years? (05 mark)

c. What is the probability to have a rainfall of 1500 mm or above? (05 mark)

d. What is the probability to have a rainfall less than 2000 mm? (05 mark)

e. What is the recurrence interval of 2000 mm rainfall? (05 mark)

- END -

52