



Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Mineral Resources and Technology Degree Programme
3rd Year 2nd Semester Examination – August/September 2014



MRT 351-1 Hydrology

Number of questions: Two (02)
Answer all questions
Time allocation: One (01) hour
Total marks: 100

1. The observed flows in a stream due to a storm of 3hr duration with a watershed area of 0.126 km² are given in the table.

Time	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.
Flow (m ³ /hr)	15	20	40	50	45	25	15

- a. Determine the equivalent depth of direct runoff. (05 marks)
- b. Derive the 3hr unit hydrograph. (05 marks)
- c. What will be the outflow hydrograph for 2hr storms of 15 mm and 5 mm started at 2 p.m. and 4 p.m. respectively? (40 marks)

(State assumptions you made in solving this problem)

2. Mean Annual Rainfall values in mm for Polonnaruwa from year 1989 to 2013 are 1620, 1650, 1760, 2150, 1730, 2200, 1880, 1920, 2320, 2240, 1710, 1825, 2090, 1910, 2020, 2150, 2020, 2150, 1690, 2400, 1600, 2020, 1800, 1960, and 1850, respectively.
- a. Determine the 75% probability rainfall value in mm. (20 marks)
- b. What is the rainfall value in mm that occurs once in 5 years? (10 marks)
- c. What is the probability to have a rainfall of 1900 mm or above? (10 marks)
- d. What is the recurrence interval of 2000 mm rainfall? (10 marks)