



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2013/2014

**THIRD YEAR FIRST SEMESTER EXAMINATIONS FOR THE DEGREE
OF BACHELOR OF SCIENCE IN EARTH SCIENCE WITH
INFORMATION TECHNOLOGY**

(MAIN CAMPUS)

NGA 301: SURFACE WATER HYDROLOGY I

Date: 24th March, 2014

Time: 2.45 - 5.00pm

INSTRUCTIONS:

- Answer QUESTION ONE and any other TWO questions.
- Sketch maps and diagrams should be used whenever appropriate.



NGA 301: SURFACE WATER HYDROLOGY I

1. a) Discuss the injection method of discharge measurements. (6 marks)
- b) Write explanatory notes on the following
 - i. Uniform and non-uniform flow (4 marks)
 - ii. Steady and unsteady flow (4 marks)
 - iii. Slow, critical and fast flow (4 marks)
- c) Describe a storm hydrograph. (6 marks)
- d) Examine types of overland flow and interflow. (6 marks)
2. Examine the criteria for river classification. (20 marks)
3. Discuss factors influencing runoff from a catchment. (20 marks)
4. Examine methods of stage measurements. (20 marks)
5. a) Discuss types of water erosion. (10 marks)
- b) Explain modes of sediment transport. (10 marks)
6. a) Describe velocity- area method of discharge measurement. (10 marks)

b) The following data were collected from a certain stream at a gauging station. Compute the discharge and mean velocity. (10 marks)

Distance from the river bank (m)	Depth (m)	Velocity (m/s)
0	0	0
5	1.7	0.27
10	2.5	0.40
15	3.3	0.38
20	4.1	0.51
25	4.4	0.54
30	3.6	0.52
35	2.4	0.42
40	1.6	0.38
45	1.6	0.26
47	0	0