



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2015/2016

SECOND YEAR SECOND SEMESTER EXAMINATIONS FOR THE
DEGREE OF BACHELOR SCIENCE IN EARTH SCIENCE WITH
INFORMATION TECHNOLOGY

MAIN CAMPUS

NGA 215: FUNDAMENTALS OF HYDROLOGY

Date: 26th April, 2016

Time: 11.00 - 1.00 pm

INSTRUCTIONS:

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



NGA 215: FUNDAMENTALS OF HYDROLOGY

1. a) Describe methods of measuring evaporation. (12 marks)
- b) The following table gives rainfall and evaporation values of major world rivers. Determine runoff values in mm and runoff coefficients for each river. (8 marks)

River	Precipitation (mm)	Evapotranspiration (mm)
Nile	220	190
Orinoco	1330	420
Parana	1000	625
Mekong	1500	1000
Lena	350	140
Rhine	850	500
Amur	450	265
Yenisei	450	220

- c) Discuss types of groundwater. (10 marks)
2. 'Human activities have greatly influenced the hydrological cycle'. Discuss. (20 marks)
3. a) Explain the main sources of error in precipitation measurement. (12 marks)
- b) Precipitation fall on a catchment area of 50 km² is measured by six rain gauges as shown in the table below. From the measurements, calculate the areal rainfall of the area using:
- Arithmetic mean method. 3 marks
 - Thiessen polygon method. 5 marks

Rain gauge	1	2	3	4	5	6
Rainfall (mm)	205.2	191.5	186.8	172.3	164	151
Thiessen polygon area	7.8	8.3	10.2	11.5	5.4	6.8

4. Examine the major types of springs. (20 marks)
5. a) Discuss types of groundwater aquifers. (10 marks)
- b) Explain types of subsurface formations and their hydraulic properties. (10 marks)
6. Examine the factors influencing infiltration. (20 marks)