MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2015/2016

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

MAIN CAMPUS

NGA 402: DRINKING WATER TECHNOLOGY

Date: 15th January, 2016 Time: 2.30 - 4.30 pm

INSTRUCTIONS:

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

NGA 402: DRINKING WATER TECHNOLOGY

1. (a) With diminishing water resources, it is becoming difficult to meet the demand of growing urban population. Discuss ways that can ensure equity and sustainability in the water supply.

12 marks

(b) A pipe carrying water has a diameter of 0.08m at datum, where the mean flow velocity is 2m/s with a gauge pressure of 800KPa. The other end of the pipe has a bore diameter 0.05m and is 50m above datum. Neglecting friction, determine the pressure at this end.

8 marks

(c) Examine factors that affect domestic water demand.

10 marks

2. Water pollution is a threat to domestic water supply. Discuss.

20 marks

3. Examine methods used for water distribution in urban areas.

20 marks

4. Discuss the primary treatment in a water processing plant.

20 marks

5. (a) Show that the power generated by a pump is given as

$$Power = Q\rho h\eta$$

Q is the discharge
ρ is the density
h is the total head
η is the efficiency

6 marks

(b) Examine FOUR types of pumps used in lifting water from one level to another.

14 marks

6. (a) The population of a town for 5 decades is given in the table below.

Year	1970	1980	1990	2000	2010
Population	28000	34000	42000	47000	59000

Determine the population for the year 2043 assuming that the growth is constant.

12 marks

(b) Explain the procedures undertaken during the jar test experiment.

8 marks