



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

P.O. Box 972-60200 – Meru-Kenya.

Tel: 020-2069349, 061-2309217. 064-30320 Cell phone: +254 712524293, +254 789151411

Fax: 064-30321

Website: www.must.ac.ke Email: info@must.ac.ke

University Examinations 2013/2014

SECOND YEAR, FIRST SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL
ENGINEERING

ECV 0225: PUBLIC HEALTH ENGINEERING

DATE: APRIL 2014

TIME: 1 ½ HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE – (30 MARKS)

- (a) Explain any five factors affecting water demand. (5 Marks)
- (b) List any five measures that can be taken to prevent water borne diseases. (5 Marks)
- (c) Explain the seven key concepts in municipal waste reduction. (7 Marks)
- (d) List four characteristics of hazardous waste. (4 Marks)
- (e) Explain the rules of environmental engineers in public health management. (5 Marks)
- (f) Explain any four factors that must be considered when siting a land fill. (4 Marks)

QUESTION TWO – (15 MARKS)

- (a) Explain the objectives of waste water treatment. (4 Marks)
- (b) A water treatment plant is being planned to serve a population of 30,000 people. The average daily water demand is 150 litres.
 - (i) Calculate the maximum daily demand of the plant. (3 Marks)
 - (ii) Calculate the maximum hourly water demand. (3 Marks)
 - (iii) Calculate the volume of five flow. (5 Marks)

QUESTION THREE – (15 MARKS)

- (a) Explain the following types of composting a:
 - (i) In-vessel composting. (3 Marks)
 - (ii) Window composting (3 Marks)

- (iii) Aerated static pile (3 Marks)
- (b) Explain any three advantages of composting as a disposal method. (3 Marks)
- (c) Explain any three disadvantages of composting as a method of solid waste disposal. (3 marks)

QUESTION FOUR – (15 MAKS)

- (a) Explain the assumptions made when computing water flow rates in urban areas. (3 Marks)
- (b) Given the following information, predict population for the years 1991 and 1994 using the;
 - (i) Arithmetic progression method. (4 Marks)
 - (ii) The geometric progression method (4 Marks)
 - (iii) The incremental increase method (4 Marks)

Year	Population ('000')	Increment per decade	Incremental increase
1901	60	-	-
1911	65	+5	-
1921	67	+2	-3
1931	72	+5	+3
1941	79	+7	+2
1951	89	+10	+3
1961	97	+8	-2
1971	120	+23	+15