

**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF INDUSTRIAL TECHNOLOGY
BACHELOR OF ENGINEERING (HONS) DEGREE
DEPARTMENT OF CIVIL AND WATER ENGINEERING
PART V SECOND SEMESTER EXAMINATIONS- MAY 2014**

SOLID WASTE MANAGEMENT –TCW 5006

Instructions:

Answer question 1 and any other three (3) question

Total marks: 100

Time: 3 hours

QUESTION 1

You have won a major tender for assessment of environmental impacts of a land development programme aimed at establishing a landfill site and associated infrastructure in Bulawayo.

Describe what could constitute the following:

- a. Terms of reference/proposal of the EIA study (16 marks)
- b. Environmental Impact Statement (EIS) (12 marks)
- c. Briefly describe the components of the EIA report. (12 marks)

QUESTION 2

Explain the inter-relationship of different functional elements in a solid waste management system. (20 marks)

QUESTION 3

- a. Describe the various factors to be considered in the selection of a site for a sanitary landfill (12 marks)
- b. Explain, with sketches, the area method and trench method of sanitary landfilling. (8 marks)

QUESTION 4

- a. Explain hauled container system and stationary container system in solid waste management. What are the advantages and disadvantages of each system? (10 marks)
- b. The James Court apartments consist of 50 units with an average of 1.9 persons/unit. The manager has decided to provide one disposal unit for mixed waste and a single unit for all recycled material. Assuming, 2kgs/capita.day, total waste, % recovered for recycling 12-16% by weight. Determine the size of the two containers for weekly pickup. (10 marks)

QUESTION 5

a. Determine the area required for a new landfill site with a projected life of 20 years for a population of 150 000 generating 25kg/household/week of solid waste. The density of waste is assumed to be 500kg/m³ and maximum height of 10 m for the landfill should not be exceeded (10 marks)

b. Discuss various active measures which may be adopted for the control of landfill gases. (10 marks)