



TECHNICAL UNIVERSITY OF MOMBASA

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SCHOOL OF ENGINEERING AND TECHNOLOGY  
DEPARTMENT OF BUILDING & CIVIL ENGINEERING  
UNIVERSITY EXAMINATION FOR:

BACHELOR OF TECHNOLOGY IN CIVIL ENGINEERING  
TCV 4410 SOLID WASTE MANAGEMENT & TREATMENT  
END OF SEMESTER EXAMINATION  
SERIES: JANUARY 2025  
TIME: 2 HOURS

**PAPER A**

**Instructions to Candidates**

You should have the following for this examination

*-Answer Booklet, examination pass and student ID*

This paper consists of **five** questions.

Attempt question ONE (Compulsory) and any other TWO questions.

**Do not write on the question paper.**

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**QUESTION ONE (COMPULSORY) 20 Marks**

- a) State six factors that influence the composition and rate of solid waste generation (6 marks)
- b) Sketch and label the solid waste hierarchy model (4 marks)
- c) Outline the landfill treatment (6 marks)
- d) State four factors to consider when selecting site for landfill (4 marks)

**ANSWER ANY TWO QUESTIONS FROM THIS SECTION**

**QUESTION TWO (20 Marks)**

- a) Explain the process of leachate collection and control (10 marks)
- b) State four disadvantages of open dumping (4 marks)
- c) Explain the incineration process of treating solid waste (6 marks)

**QUESTION THREE (20 Marks)**

- a) Explain the following types of incinerators
  - i) Fixed grate
  - ii) Rotary kiln
  - iii) Fluidized (12 marks)

- b) State the roles of environmental officer at the main dump site (6marks)  
(2 marks)
- c) Name the hazardous waste in solid waste management (2 marks)

**QUESTION FOUR (20 Marks)**

- a) Describe solid waste transfer station (10 marks)
- b) Explain solid waste and communicable diseases relation (10 marks)

**QUESTION FIVE (20 Marks)**

- a) State four goals of municipal solid waste management (MSWM) (4 marks)
- b) State the potential dangers of hazardous solid waste (4 marks)
- c) Outline the importance of involving stake holders in solid waste management  
(8 marks)
- d) State four constrains in solid waste management (4 marks)