



**UNIVERSITY OF SWAZILAND
FINAL EXAMINATION PAPER**

PROGRAMME: BSC ABE 4
BSC FSNT 4

COURSE CODE: ABE 405

TITLE OF PAPER: SANITATION AND WASTE MANAGEMENT

TIME ALLOWED: TWO (2) HOURS

SPECIAL MATERIAL REQUIRED: NONE

INSTRUCTIONS: ANSWER QUESTION ONE AND ANY TWO
OTHER QUESTIONS.

**DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN
GRANTED BY THE CHIEF INVIGILATOR**

SECTION A. COMPULSORY QUESTION**Question One**

- a. Discuss the factors considered when designing a waste management system in relation to the following;
- | | | |
|----------------------------|-----------|-------------------|
| i. The size of waste | /4 | |
| ii. Site of waste disposal | /4 | |
| iii. Public awareness | /10 marks | (18 marks) |
- b. Describe the anaerobic digestion process of organic material to produce biogas.
(12 marks)
- c. Describe two of the methods that could be used to recover costs for a waste management system.
(10 marks)

SECTION B. ANSWER ANY TWO QUESTIONS**Question Two**

- a. Describe any two strategies that are used by municipalities to minimise generation and improve treatment and disposal of household waste.
(10 marks)
- b. Explain the meaning of the following terms as used in sanitation and waste Management, give examples where applicable;
- | | | |
|------------------------------|----|-------------------|
| i. Sanitation ponds | /5 | |
| ii. On-site sanitation | /5 | |
| iii. A leach-field | /5 | |
| iv. Environmental sanitation | /5 | (20 marks) |

Question Three

- a. Describe two environmental conditions that you would consider when choosing a site for construction of a septic tank. **(10 marks)**
- b. Describe how a primary water treatment process differs from a secondary water treatment process? **(10 marks)**
- c. Describe what composting is and its relevance in waste management. **(10 marks)**

Question Four

- a. Describe four components of a landfill that prevent pollution of the environment. **(20 marks)**
 - b. Discuss the common challenges of managing landfill sites experienced by municipalities and local governments. **(10 marks)**
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