



**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.

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GRANTED BY THE CHIEF INVIGILATOR**

SECTION A. COMPULSORY QUESTION

Question One

- a. Based on the pathogenic microorganism's properties that causes Cholera, explain why the disease is easily transmitted and not easy to eradicate. (15 marks)
- b. Describe the 4 main processes involved in slow sand filter water purification. (20 marks)
- c. Explain what is an integrated waste management. (5 marks)

SECTION B. ANSWER ANY TWO QUESTIONS

Question Two

- a. Describe the anaerobic digestion process of organic material to produce biogas. (15 marks)
- b. Describe three of the methods that could be used to recover costs for a waste management system. (15 marks)

Question Three

- 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 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)