

**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**

FACULTY OF INDUSTRIAL TECHNOLOGY  
BACHELOR OF ENGINEERING (HONS) DEGREE  
Part Three Examination May 2011

**TCE 5004 Environmental Process Engineering**

Duration of Examination 3Hours

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Instructions to Candidates

1. Answer **ALL** questions in Section A and **TWO** question from Section B
  2. Start the answers for each question on a new page.
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**SECTION A**

1. State and explain three methods used for the Industrial solid waste disposal. (9)
2. State and explain the suitability of solid waste
  - i. Incineration (6)
  - ii. Composting (6)
3. What is the importance of lining modern landfills? (3)
4. Why should a negative pressure drop be maintained in cement manufacturing plant and how is this achieved. (3)
5. State and explain two technologies used for the composting. (8)
6. State and explain three methods used for the treatment of air discharges from industries. (9)

7. State and explain three treatment systems for control of particulates. (12)

8. State the effects of following pollutants to the environment.

i. Carbon monoxide (2)

ii. Hydrogen sulphide (2)

## SECTION B

1. Describe a Scientific way of disposing domestic solid waste. This method should be applied in such a way that it satisfies a specific need to the society. (20)

2. Describe fully the air pollution cycle and explain how pollution can be minimized in each of the phases. (16)

b. Describe how an industrial effluent containing hydrogen sulphide can be treated to remove this gaseous pollutant. (4)

3. Describe how the following industrial solid waste can be disposed and their effects if not properly disposed.

- i. Tyres (5)
- ii. Plastics and P.V.C. pipes (5)
- iii. Human Sludge (5)
- iv. Agricultural Sludge (5)

END OF EXAM