UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA

SECOND SEMESTER EXAMINATIONS, MAY 2018

COURSE NO: ENVIRONMENTAL PROCESS ENGINEERING
COURSE NAME: ES 278
CLASS: **ES II** TIME: 3 HR

Name**:** _____Index Number: _____

Attempt all questions in both sections

SECTION A (35 MARKS)

Provide short answers to the following questions

1. Mention three (3) factors that influence the type and the quantity of waste of generated (3 Marks)
2. State three (3) factors that are considered when selecting waste water treatment methods (3 Marks)
3. Mention three (3) major reasons why wastewater is often treated (3 Marks)
4. State three (3) environmental impacts associated with industrial waste (3 Marks)
5. State three (3) factors that contribute to the type of ions selected by ion exchangers (3 Marks)
6. State three (3) differences between chemisorption and physiosorption (3 Marks)
7. State four (4) ways on how you can practice waste management at home (4 Marks)
8. Mention the first few steps that you will take to initiate a waste management programme in your apartment or university (4 Marks)
9. List four (4) benefits often derived from cleaner technology or production (4 Marks)

10. Mention four (4) reasons why it's very difficult to choose a cyanide wastewater treatment method at a particular time (4 Marks)

11. State four (4) effects of improper waste management on the human health (4 Marks)

SECTION B (20 MARKS)

1. As part of the celebration to mark the International Waste Day, you are required to carry out an outreach programme to train people on effective waste management. Design a training manual outlining a step-by-step ways of managing waste. Amongst the key topics to be covered are
    - waste reduction
    - segregation at source
    - composting
    - recycling and re-use
    - waste collection
    - disposal options **(10 marks)**

2. Choose one of the waste management treatment methods listed below and briefly describe them in terms of operation, advantages and disadvantages **(10 marks)**

    (i) Energy recovery (ii) Resource recovery (iii) Composting
    (iv) Vermicomposting (v) Bio-methanation/ anaerobic digestion (vi) Incineration
    (vii) Pyrolysis (viii) Gasification

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