

UNIVERSITY of MINES AND TECHNOLOGY, TARKWA**END OF SECOND SEMESTER EXAMINATIONS, MAY 2019**

COURSE NO: ES 374
COURSE NAME: **Hazardous Waste Engineering**
CLASS: ES III

TIME: 3 HOURS

Answer Questions from Sections A and B**SECTION A: Answer One (1) Question****Question 1**

- a) Explain two reasons why waste professionals in any given country advocate for strict legal definition of waste. (6 marks)
- b) State four (4) characteristics hazardous wastes (4 marks)

Question 2

- a) How would you ensure degradation of cyanide effluent using chlorine gas? (6 marks)
- b) Support your process with appropriate chemical equations. (4 marks)

SECTION B: Answer Questions 3 and 4 (All questions)**Question 3**

- a) The company you are working for has decided to use Starved Air Incinerator as the best option for treatment of the hazardous waste generated by the company. As an environmental and safety engineer of the company, neatly sketch labeled diagrams for the mechanical engineering section of the company to fabricate the incinerator. (20 marks)

Question 4

- a) Deduce one (1) advantage and one (1) disadvantage associated with each of the most common modes of transportation of hazardous wastes. (8 marks)
- b) Explain the principle of “cradle-to-grave” manifest system employed in management of hazardous wastes. (6 marks)
- c) State three (3) advantages of the cradle-to-grave” manifest system. (6 marks)

Examiners: Prof W. K. Buah/ Dr S. A. Ndur