

PNG UNIVERSITY OF TECHNOLOGY

DEPARTMENT OF CIVIL ENGINEERING – FIRST YEAR POSTGRADUATE

FIRST SEMESTER EXAMINATIONS – 2022

CEME533- WASTE MANAGEMENT SYSTEMS

DATE: 6 June 2022

TIME ALLOWED: 2 HOURS (2-4 PM)

VENUE: PG CLASSROOM

EXAMINER: DR. MIRZI BETASOLO

CO-EXAMINER: DR. REVENURU SUBRAMANYAM

INFORMATION FOR CANDIDATES:

1. You have 10 minutes to read the paper. You must not begin writing during this time.
2. All answers must be written on the answer booklet provided. No other written material will be accepted.
3. Calculator only is allowed in the examination room. Notes and handouts are not allowed. MOBILE PHONE is not allowed.
4. There are three (3) Sections in this exam paper: Section A , Section B and Section C with a total of 50 marks. *Section A, is to test the student understanding on concepts of the subject matter. Section B is ESSAY. Section C is problem solving.*
5. **WRITE YOUR NAME AND ID NUMBER CLEARLY ON THE FRONT PAGE.**

GOD BLESS YOU

QUESTIONS START HERE ↓

Section A. SHORT ANSWER

QUESTION 1. What is cradle to grave? Discuss its concept. (3 marks)

QUESTION 2. What is a system framework? Cite an example. (3 marks)

QUESTION 3. What is LCA? Discuss briefly. (3 marks)

QUESTION 4. What is LCC? Discuss briefly. (3 marks)

QUESTION 5. What is RCC? Discuss briefly. (3 marks)

QUESTION 6. In toxicity assessment, list the 5 incinerator emission exposures to individuals living and working in the vicinity of a facility evaluated for both inhalations and indirect multi pathway routes of exposures. (5 marks)

Section B. ESSAY

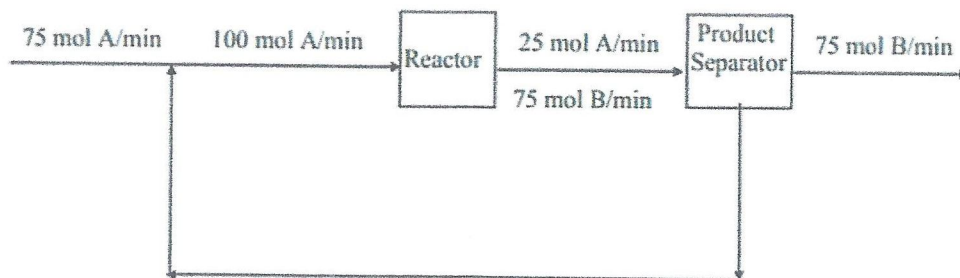
QUESTION 7. How Waste Management System promotes Waste Management and Resource Management? (5 marks)

QUESTION 8. Discuss briefly your case work potential to have an investment portfolio and show its waste management system concept. (5 marks)

Section C. PROBLEM SOLVING

QUESTION 9. Calculate the number of collection vehicles a community would need if it has a total of 6000 services (customers) that are to be collected once per week during working days in a city. (Realistically, most trucks can service only about 200 to 300 customers before the truck is full and a trip to the landfill is necessary). (5 marks)

QUESTION 10. Calculate the single pass conversion of A. (5 marks)



QUESTION 11. Calculate the dilution factor of the pollutants of drinking water sample shown in the table below. (5 marks)

Pollutants	Concentration in the stack (g/m ³)	Max ground level stack (g/m ³)
Cadmium	560,000	140
Lead	833,000	150
Mercury	334,000	200
Chromium	643,000	400
Nickel	295,000	300

QUESTION 12. Calculate excess air (% EA) if O₂ is 10 and N₂ is 75 . (5 marks)

- END OF PAPER -