Mid-West University
Examinations Management Office
Chance Examinations 2081

Bachelor level/ B.E. Civil/ 7th Semester	Full Marks: 50
Time: 3 hours	Pass Marks: 25
Subject: Solid Waste Management (CE478/CE494)	

- *Attempt all the questions*
- *Figures in the margin indicate full marks.*
- *Assume suitable values, with a stipulation, if necessary.*
- *Candidates are required to answer the questions in their own words as far as possible.*

1. a) Explain how ISWM approach can be useful to solve the present waste management problems seen in Kathmandu Valley. **(4)**

   b) What are the various methods adopted for the recovery of organic waste in Nepal? **(4)**

2. a) What is transfer Station and its type? Why is it necessary? **(4)**

   b) Define Moisture Content in the solid waste. Calculate the heat value of Acetic Acid (CH_3COOH) using modified Dulongs Formula. **(4)**

3. a) The Composition of domestic waste generated in Municipal City as determined by the Local Report analysis is given in table. **(8)**
   Determine the following:
   i. Overall moisture content of the waste?
   ii. Overall Density of the Waste?

Components	% by Weight
Food waste	60
Cardboard	4
Paper	8
Plastics	8
yard Waste	10
Rubber	10
Total	100

   b) Describe 3R Principle of SWM giving suitable examples used in hospital in Surkhet Valley. **(4)**

4. a) What is compacter size required to haul waste from a residential community with following details: **(6)**
   - Container size (c) = 0.24 m3
   - Container utilization factor = 0.75
   - Avg. no. og Container in each station = 2
   - Collection vehicle compaction ratio = 2.5
   - Container unloading time U_c = 5 min /container
   - Two-way haul distance x = 30 km
   - Speed limit = 40 km/hr.
   - Length of workday H = 8 hr.
   - Average driving time between the containers= 6 minutes

   b) Define leachate? How is it managed in a landfill Site? **(6)**

5. a) What is the area required for land filling the waste of Surkhet if the per capita waste generation is 150g (1 liter per capita by volume as discarded) and average projected population is 900,000 for one decade. Calculate the area required if 30% of the waste produced per capita is added for commercial and other wastes and 70% of the waste is expected to reach the landfill site. The density of waste after compaction in the landfill is expected to be 473 kg/m³. It is estimated that there will be 5 cells in 1 lift of 5 m including daily cover height of 15 cm and intermittent cover of 30 cm. The landfill allows maximum of 5 lifts. The landfill site is run for 6 days a week. **(6)**

b) What is MRF? Write some notes on MRF for Paper Recycling? **(4)**

The End