

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TI - EXAMINATION (September - 2018)
B.Tech. (VII – SEM)

COURSE CODE: 14M31CE115

MAX. MARKS: 15

COURSE NAME: Solid Waste Management

COURSE CREDIT: 3

MAX. TIME: 1 HR

Note: Attempt all questions. Assume suitable data if required. Carrying of mobile phone during examinations will be treated as case of unfair means

1. Explain in detail the following

(a) Source based classification of solid wastes

(2)

(CO-1)

(b) Type based classification of solid wastes

(2)

2. (a) Discuss in detail the factors affecting solid waste management system?

(3)

(CO-2)

(b) Estimate the moisture content of the solid waste sample from the following data:

(2)

Waste Composition	% by weight	Moisture Content (%)
Food waste	15	70
Paper	45	6
Cardboard	10	5
Plastics	10	2
Garden Trimmings	10	60
Wood	5	20
Tin Cans	3	3

(CO-2)

3. Solid wastes from a commercial area are to be collected using a stationary-container collection system having 3.0m^3 containers. Determine the appropriate truck capacity for the following conditions:

(CO-3)

1. Container size = 3m^3

2. Container utilization factor = 0.62

3. Average number of containers at each location = 2

4. Collection- vehicle compaction ratio = 2.2

5. Container unloading time = 0.2h/container

6. Average drive time between container locations = 0.2 h

7. One-way haul distance = 50km

8. Speed limit=88km/h (55mi/h); $s = 0.1\text{h/trip}$; $a = 0.016$; $b = 0.011$

9. Time from garage to first container location= 25 min

10. Time from last location to garage= 30 min

11. Number of trips to the disposal site per day=3

12. Length of the workday=8h

(3)

4. (a) A contractor agreed to haul the solid wastes from an industrial district of a city. The industries agreed to store their wastes on large containers located at strategic points. Due to the sizes of the containers, the hauled -container system of collection is to be used. Based on a traffic study, t_1 , t_2 and d_{bc} were found to be 15, 20 and 9 minutes respectively. If the round trip haul distance averaged 60km at a speed limit of 55mph, how many containers can be serviced on a collection day of 8 h? (Take the values- $s = 0.1\text{h/trip}$; $a = 0.016$; $b = 0.011$)

(C-3)

(1.5)

- (b) Discuss Solid Waste Management (SWM) in Indian Scenario?

(1.5)

(C-1)