CSWATT/Jan/2025

ASSIGNMENT BOOKLET

CERTIFICATE IN SOLID WASTES TREATMENT TECHNIQUES (CSWATT)

Last date for submission

31th March

School of Engineering and Technology
Indira Gandhi National Open University
Maidan Garhi, New Delhi-110068

Dear Learners,

As you are aware, a weightage of 30% has been earmarked for continuous evaluation which would consist of **Tutor Marked Assignment** for each course, BWA-001, BWA-002, BWA-003 and BWA-004 of this program. Learners are required to score minimum 40 marks out of 100 marks in assignment of each course. Submit assignment response to **Programme Coordinator (CSWATT), Block C, School of Engineering & Technology, Indira Gandhi National Open University, Maidan Garhi, New Delhi - 110068**

A feedback form is enclosed with this assignment. Please complete it after solving this assignment and send it to the Course Coordinator (CSWATT) on the address specified on the feedback form.

INSTRUCTIONS FOR SUBMITTING ASSIGNMENTS

Before attempting the assignment, please read the following instructions carefully:

1) On top of the first page of TMA answer sheet, please write the details exactly in the following format:

Enrolment no:
Name:
Address:

Course code:
Course title:
Assignment code: **Assignment no.:**
Study Centre: **Date:**

Please follow the above format to facilitate evaluation and to avoid delay.

2) Use full size paper for writing your answers.

3) Leave 4 cm margin on the left, top and bottom of your answer sheet.

4) Answers should be precise.

5) While solving problems, clearly indicate the question number along with the part being solved, if any. Recheck your work before submitting it.

Answer sheets received after the due date shall not be accepted. We strongly feel that learner should retain a copy of assignment response to avoid any unforeseen situation and append, if possible.

WE WISH GOOD LUCK!

Course Code: BWA-001
Title of the Course: Solid Wastes & Regulatory Framework
Assignment Code: BWA-001/TMA/ **Jan/2025**
Maximum Marks: 100

Note: All questions are compulsory. All questions carry equal marks.

1. What do you understand by construction and demolition (C&D) waste? Explain in brief.
2. What do you understand by hazardous waste? What are the characteristics of hazardous wastes?
3. What are the principles of integrated solid waste management?
4. Using following data evaluate the quantity of solid waste generated rate per week for a city residential area consists of 5000 homes. Given data are collected from local transfer station and observation period was one week. Assume approximately 2 adults and 1 child per home (2.5 people per home):

No. of vehicle	No. of Strip	Volume (m^3)	Specific weight (kg/m^3)
I	15	10	280
II	20	8	210
III	25	12	320

5. What are the health effects of solid waste pollution?
6. What are the Reasons for change in composition of waste?
7. Using the data in Table given below, estimate the 'as discarded' density of 1000kg of typical residential waste.

Component	Percent by mass
Food Waste	15
Paper	45
Cardboard	15
Plastics	10
Wood	5
Tin Cans	10

8. Explain the significance of proximate and ultimate analysis of waste.
9. Discuss the authorizations are required for consent to establish, consent to operate and renewal under the hazardous waste management rules.
10. Discuss the authorizations required under the Plastic Waste Management rules.

Course Code: BWA-002
Title of the Course: Solid Wastes Collection and Transportation
Assignment Code: BWA-002/TMA/ **Jan/2025**
Maximum Marks: 100

Note: All questions are compulsory. All questions carry equal marks.

1. What are various considerations to be made in the design of a waste collection system?
2. Write short notes on the different kinds of community waste storage systems.
3. Compare and contrast semi-compaction vehicles and compaction vehicles.
4. Write information that should be collected and updated regularly for planning of solid waste collection.
5. Why is it important to assess the feasibility for the waste processing and disposal at the time of waste collection planning and scheduling?
6. Explain about various components of Investment Costs for waste management plan?
7. What are the different types of revenues that can be incurred from waste management?
8. Explain various type of loaders used for transportation of solid waste.
9. What are the various strategies for route optimization?
10. A town having population of 134659 with solid waste generation rate of 450 gm/capita/day uses a landfill for managed total waste/day with total income and expenditure cost Rs. 4/kg of waste. Calculate the tipping fee rate.

Course Code: BWA-003
Title of the Course: Solid Wastes Processing and Treatment Techniques
Assignment Code: BWA-003/TMA/ **Jan/2025**
Maximum Marks: 100

Note: All questions are compulsory. All questions carry equal marks.

1. List the criteria to be considered in the evaluation of various options before adopting a source reduction policy.
2. Given that 100 ton/hr of solid waste is applied to a rotary screen for the removal of glass prior to shredding, determine the recovery efficiency and effectiveness of the screen, based on the following experimental data:

   The percentage of glass in solid waste = 8%

   Total weight of material in under flow = 10 ton/h

   Weight of glass in screen underflow = 7.2 ton/h
3. List the factors that you will consider while planning a recycling program.
4. State the 'End uses' of recycled plastic.
5. What are the main products of Incineration Process? Describe Dioxins and Furans.
6. What is Flue Gas? Briefly describe the process for Flue gas cleaning.
7. What is the difference between osmosis and reverse osmosis?
8. How does the process of neutralization help in the treatment of hazardous waste?
9. Explain the types of studies in mining waste characterization.
10. Enlist various types of mining wastes. What are the advantages and disadvantages of mining waste?

Course Code: BWA-004
Title of the Course: Disposal of Wastes
Assignment Code: BWA-004/TMA/ **Jan/2025**
Maximum Marks: 100

Note: All questions are compulsory. All questions carry equal marks.

1. Explain the classification of sanitary landfilling based on sources of Solid waste.
2. Write a note on microbial degradation of refuse in landfills.
3. Discuss the landfill liners and its classification.
4. Write the design consideration for Landfills.
5. What are the gases components that emerge from a typical landfill and the factors that affect its production?
6. Discuss the several hazards and health issues created by landfill gases.
7. Explain the various methods for the treatment of landfill gases.
8. Explain the mechanism of leachate generation with reference to water balance method?
9. What are the various contaminants present in leachate?
10. Explain briefly different treatment methods to treat leachate?