BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP/2025)

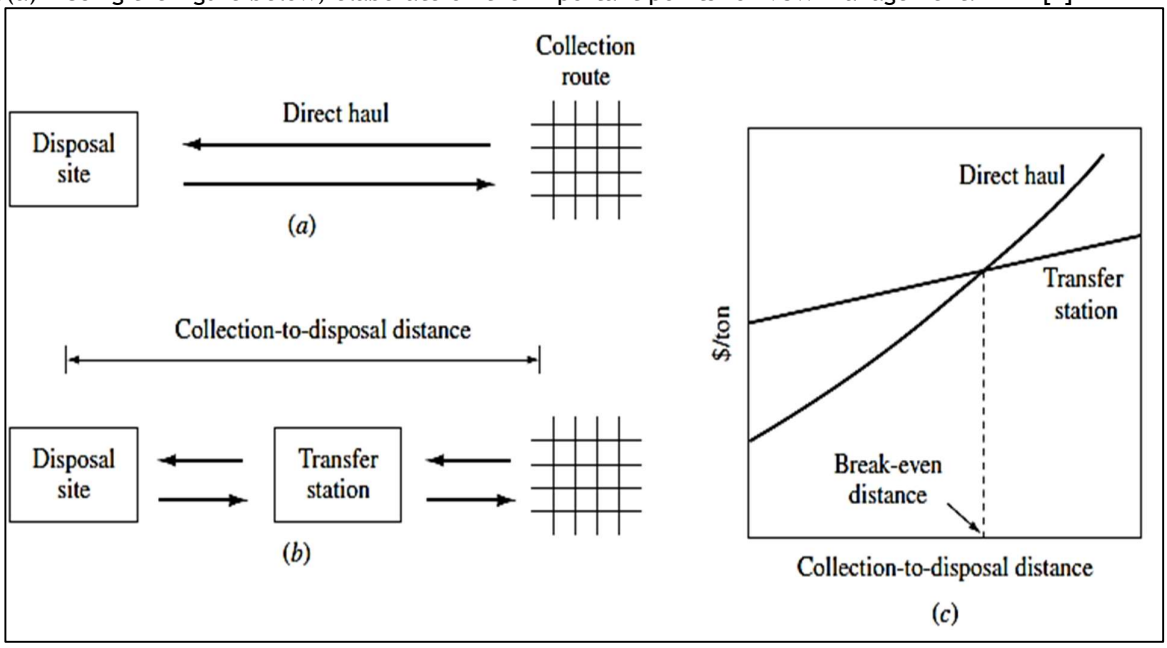
CLASS: BTECH **SEMESTER: IV**
BRANCH: CIVIL ENGINEERING **SESSION: SP/2025**

SUBJECT: CE421 SOLID WASTE MANAGEMENT

TIME: 02 Hours **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1(a)	State the factors which affect the waste generation rate.	[2]	1	1
Q.1(b)	Explain the functional elements of solid waste management.	[3]	1	1
Q.2(a)	Outline the process of collecting a solid waste sample.	[2]	1	1
Q.2(b)	Identify the problems that arise due to improper disposal of MSW.	[3]	1	1
Q.3(a)	Using the figure below, elaborate on the important points for MSW management.	[2]	2	2



Q.3(b)	Conduct an economic analysis to estimate the annual cost of MSW collection per household. The empirical constants for the annualized cost of procuring, operating and maintaining a compactor truck: α – 25000, β = 4000. Assume that trucks require two people, each charged at Rs. 100/- per hour, who work daily for 8 hours. Trucks (V = 20 m^3) collect waste from 250 houses each day. Each house generates 50 kg of waste per week. The trucks and crew work over 5 days per week, and curbside pickup is provided once a week for each house.	[3]	2	2
Q.4(a)	Discuss the different types of vehicles used for primary and secondary collection of MSW.	[2]	2	2
Q.4(b)	Describe the process of vehicle routing of MSW collection.	[3]	2	2
Q.5(a)	Explain why the processing of waste is considered the least preferred option in the waste management hierarchy.	[2]	3	4
Q.5(b)	Examine the biochemical methods used for MSW processing.	[3]	3	4

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