

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: B.TECH.
BRANCH: CHEMICAL ENGINEERING**

**SEMESTER : IV
SESSION : SP/2025**

SUBJECT: CL233A WASTE MANAGEMENT

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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Q.1(a)	Define the following terms: (1) biodegradable waste, (2) Incineration, (3) Gasification.	[5]	1 2
Q.1(b)	Share your thoughts on why bio-methanation is considered a more effective solution for waste management in India.	[5]	1 5
Q.2(a)	Discuss the major issues arising from mismanaged plastic waste in India.	[5]	2 4
Q.2(b)	Briefly describe any two technologies available for plastic waste treatment.	[5]	2 2
Q.3(a)	Share your views on the key measures that can be adopted to improve the effectiveness of e-waste recycling in India.	[5]	3 5
Q.3(b)	Describe the hydrometallurgy process for recovering valuable materials such as Mn, Co, Ni, and Li from spent LIBs.	[5]	3 2
Q.4(a)	Distinguish between food loss and food waste, and elaborate on the significance of effective food waste management.	[5]	4 4
Q.4(b)	Briefly describe the production of fuel-grade ethanol from biomass/food waste with the help of a neat flowsheet.	[5]	4 2
Q.5(a)	What are the different categories of Bio-medical waste as per Bio-Medical Waste Management Rules, 2016? Discuss the consequences of inadequate biomedical waste management on public health and environmental quality.	[5]	5 2,4
Q.5(b)	Briefly describe any two technologies available for Bio-medical waste treatment/disposal.	[5]	5 2

:::01/05/2025:::M