U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

July 2023 Semester End Main Examinations

Programme: B.E. **Semester: VI**
Branch: Civil Engineering **Duration: 3 hrs.**
Course Code: 20CV6PESWM **Max Marks: 100**
Course: Solid Waste Management **Date: 17.07.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			UNIT - I	CO	PO	Marks
1	a)		Outline the inter-relationship of functional elements in a solid waste management system with flow diagram.	*CO1*	*PO1*	**10**
	b)		Determine the energy content of solid waste sample with the following composition. Assume the Moisture Content(MC) = 16%, Ash content = 5%. What is the energy content on dry basis and ash free dry basis.	*CO1*	*PO2*	**10**

Component	Food Waste	Paper	Card Board	Plastic	Garden trimming	Wood	Tincans
% by mass	16	46	12	8	8	6	4
Energy Content KJ/Kg	4950	16550	16500	32200	6300	18400	800

			OR			
2	a)		Explain with neat sketch, the operational sequence of Hauled Container System (HCS) and stationary container system (SCS).	*CO2*	*PO3*	**10**
	b)		Describe the following with neat sketches i) Garbage Chute ii) Route optimization	*CO2*	*PO1* *PO3* *PO4*	**10**
			UNIT - II			
3	a)		Explain the factors affecting Incineration process.	*CO1*	*PO4*	**08**
	b)		Explain the Mechanical volume reduction and chemical volume reduction	*CO1*	*PO4*	**08**
	c)		Discuss the 3T'S of Incineration process	*CO1*	*PO4*	**04**
			UNIT - III			
4	a)		Discuss the factors to be considered for the design of aerobic composting.	*CO1*	*PO4*	**10**
	b)		Outline the Indore composting process of MSW with neat sketch.	*CO3*	*PO6* *PO7* *PO8*	**10**

			UNIT - IV			
	5	a)	Discuss the factors to be considered for the selection of potential landfill site.	*CO2*	*PO6 PO7 PO8*	**10**
		b)	Explain the control of leachate at landfill site with diagram.	*CO3*	*PO6 PO7 PO8*	**10**
			UNIT - V			
	6	a)	Enumerate the Diffraction Principle of XRD and Bragg's law.	*CO3*	*PO1 PO3 PO6 PO7*	**10**
		b)	Illustrate fundamentals of crystal structures-unit cells, lattice planes and Miller indices.	*CO3*	*PO1 PO3 PO6 PO7*	**10**
			OR			
	7	a)	Explain the principles and applications of SEM, TEM and associated energy dispersive X-ray spectroscopy (EDXS).	*CO3*	*PO1 PO3 PO7*	**10**
		b)	Explicate the applications of X-ray Fluorescence (XRF), XANES and EXAFS.	*CO3*	*PO1 PO3 PO7*	**10**

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