

**P.E.S. College of Engineering, Mandya - 571 401***(An Autonomous Institution affiliated to VTU, Belagavi)***Sixth Semester, B.E. - Civil Engineering****Semester End Examination; August - 2023****Solid Waste Management**

Time: 3 hrs

Max. Marks: 100

**Course Outcomes***The Students will be able to:**CO1: Understand the importance, source, classification of solid waste.**CO2: Learn different methods of collection, transportation and management of solid waste.**CO3: Learn different methods of treatment of solid waste like incineration composting, sanitary land filling and design of sanitary landfill..**CO4: Learn different disposal methods of solid waste, recycling and reusing of solid waste.***Note: I) PART - A is compulsory. Two marks for each question.****II) PART - B: Answer any Two sub questions (from a, b, c) for a Maximum of 18 marks from each unit.**

Q. No.	Questions	Marks	BLs	COs	POs
<b>I : PART - A</b>		<b>10</b>			
1 a.	What are the sources of solid waste?	2	L1	CO1	PO1,7
b.	Write the classification of transfer station. Explain any one.	2	L1	CO2	PO3,4
c.	List the three T's of Incineration.	2	L1	CO3	PO3,7
d.	What is leachate in land fill?	2	L1	CO3	PO3,7
e.	Explain in brief vermi composting.	2	L1	CO4	PO4,5,11
<b>II : PART - B</b>		<b>90</b>			
<b>UNIT - I</b>		<b>18</b>			
2 a.	Write a note on importance and scope of solid waste management system.	9	L2	CO1	PO1
b.	Explain material flow diagram in a technological society.	9	L3	CO1	PO1,7
c.	Write the flow chart of six functional elements and explain any three of them.	9	L2	CO1	PO1,7
<b>UNIT - II</b>		<b>18</b>			
3 a.	What is the different collection systems based on mode of operation. Explain any one of them.	9	L1	CO2	PO3,4
b.	What are the different residential collection services used explain them?	9	L2	CO2	PO3,4
c.	Explain; i) Mechanical volume reduction				
	ii) Size reduction	9	L3	CO2	PO3,4
	iii) Component reparation				
<b>UNIT - III</b>		<b>18</b>			
4 a.	Explain the process of Incineration along with neat sketch.	9	L2	CO3	PO3,7
b.	Explain Indor method and Bangalore method of composting.	9	L2	CO3	PO3,7
c.	List the factors affecting composting process, explain them briefly.	9	L2	CO3	PO3,7

**UNIT - IV****18**

- |  |   |    |     |       |
|--|---|----|-----|-------|
| 5 a. Explain the factor considered in evaluating potential solid waste disposal site.    | 9 | L2 | CO3 | PO3,7 |
| b. Explain the methods used for venting land fill gases along with sketches.             | 9 | L2 | CO3 | PO3,7 |
| c. Discuss the control of leachate movement in a sanitary land fill along with a sketch. | 9 | L2 | CO3 | PO3,7 |

**UNIT - V****18**

- |  |   |    |     |          |
|--|---|----|-----|----------|
| 6 a. Write a note on open dumping and ocean disposal.  | 9 | L2 | CO4 | PO4,5,11 |
| b. Explain the process of pyrolysis along with sketch. | 9 | L2 | CO4 | PO4,5,11 |
| c. Explain recycle and reused of plastic wastes.       | 9 | L2 | CO4 | PO4,5,11 |

\* \* \* \*