

M. TECH. ENVIRONMENTAL BIOTECHNOLOGY First Year Second Semester - 2024

Subject: SOLID AND HAZARDOUS WASTE MANAGEMENT

Time: Three hours

Full Marks:100

Use separate answer script for each Part

Part I (80 Marks)

Q. No.	Questions	Marks
	Answer any four questions:	20 × 4 = 80
1.	a) How different functional elements in solid waste management (SWM) system contribute significantly to maintain a healthy environment? b) Effectiveness of composting process depends on several environmental factors -Explain.	(10 + 10)
2.	a) Classify all types of hazardous wastes available on earth surface. b) Special cares are required to be taken for handling of hazardous waste - Justify. c) How hazardous waste can be chemically treated for its safe disposal or detoxification?	(6 + 6 + 8)
3.	a) Brief the biochemical conversion and thermochemical conversion used for recovery of energy from solid waste. b) Briefly describe the different types of land disposal techniques.	(14 + 6)
4.	a) Composting and Incineration processes have both advantages and disadvantages in solid waste management system – Explain. b) Define the usefulness of composting in management of solid waste. c) All wastes generated in a municipality are not hazardous in character - Explain.	(8 + 6 + 6)
5.	a) Briefly define the control of landfill gas, its method of treatment and management of landfill leachate. b) How socio-economic status affects the composition of waste? c) How sanitary landfill differs from open dumping in solid waste management system?	(12 + 4 + 4)

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2nd Semester Examination

M. Tech. (Environmental Biotechnology) Session 2023-24

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Part II (20 Marks)

Each question carries 10 marks. Answer any two questions

1. Discuss briefly with diagrams, the Beltsville process and Rutgers process for composting.
2. Discuss briefly about the DRANCO process of composting.
3. What are the factors to be considered for efficient landfill bioreactor process.
4. Explain briefly the five phases in the operation of a landfill bioreactor.