B.Tech. (Mechanical Engineering) Seventh Semester (C.B.C.S.)

Open Elective-II : Waste Management

P. Pages : 2 **PSM/KW/23/8228**

Time : Three Hours * 2 2 8 5 * Max. Marks : 70

Notes : 1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Due credit will be given to neatness and adequate dimensions.
8. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Enumerate and describe the major types of solid wastes based on their composition. **7**

b) Discuss the challenges associated with the management of e-waste and its classification as a separate waste type. **7**

OR

2. a) Define waste reduction, recycling, and reuse, and explain their significance in sustainable waste management. **7**

b) Describe the generation of mining solid waste and its environmental impacts on nearby ecosystems. **7**

3. a) Discuss the benefits of proper waste handling and segregation practices at the source in terms of waste management efficiency and resource recovery. **7**

b) Compare and contrast different waste collection methods, such as curb-side collection, door-to-door collection, and community collection centres. **7**

OR

4. a) How to transfer stations help in optimizing waste transportation and reducing overall transportation costs? **7**

b) Explain the importance of proper labelling and identification of hazardous wastes during their handling and transportation. **7**

5. a) Compare and contrast mechanical and thermal volume reduction methods in terms of efficiency and environmental impact. **7**

b) Explain Incineration method for thermal volume reduction and discuss the advantages and disadvantages. **7**

OR

6.	a)	Compare and contrast the advantages of biological techniques (e.g., composting, anaerobic digestion) with chemical techniques (e. g., pyrolysis, gasification) for waste management.	**7**
	b)	Discuss the benefits of strong regulatory aspects in waste management, including environmental protection, public health, and sustainable development.	**7**
7.	a)	Explain the significance of proper hazardous waste management for human health and the environment.	**7**
	b)	How do these characteristics impact the handling and disposal of hazardous waste?	**7**

OR

8.	a)	Explain the concept of bioaccumulation and its significance in the biological transport of hazardous substances.	**7**
	b)	Define proximate analysis and explain its components, including moisture content, volatile matter, fixed carbon, and ash content.	**7**
9.	a)	Explain the characteristics that classify a waste as hazardous Provide examples.	**7**
	b)	Define TSDF and explain its significance in hazardous waste management.	**7**

OR

10.	a)	What are the primary sources of radioactive waste, and how do they differ in terms of radioactivity levels and management requirements?	**7**
	b)	Discuss the strategies and technologies used for the long-term management of HLW.	**7**

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