Q. Code: 863910

Reg. No. | | | | | | | | | | | | | |

B.E / B.TECH. DEGREE EXAMINATIONS, MAY 2024

Sixth Semester

OE18304 – SOLID WASTE MANAGEMENT

(Common to all branches except Civil Engineering)

(Regulation 2018 / 2018A)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Determine the solid waste management systems with respect to its physical, chemical, biological properties, and associated critical considerations.	**3**
CO 2	Develop the knowledge about the sources, types and composition of solid waste with methods of handling, sampling and storage of solid waste.	**3**
CO 3	Propose the appropriate method for solid waste collection, transportation, redistribution and disposal.	**4**
CO 4	Develop the skill to identify the methods of disposal of hazardous & radioactive solid waste.	**3**
CO 5	Acquire knowledge about the risk assessment and regulations of solid waste management.	**3**

PART - A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Differentiate aerobic and anaerobic decomposition.	**1**	**2**
2.	How do oxidants help in treating wastes?	**1**	**2**
3.	Differentiate flash point and upper flammability limit.	**2**	**3**
4.	Give few advantages of incineration.	**2**	**2**
5.	Classify nuclear wastes based on volume and radiation.	**3**	**2**
6.	What does transuranic waste refer to?	**3**	**2**
7.	Explain the term “Refused derived fuel (RDF)”	**4**	**2**
8.	List the 7 categories of plastics based on Chemical Properties & BIS Classification.	**4**	**3**
9.	Explain risk and risk assessment.	**5**	**3**
10.	List two benefits of an Environmental risk assessment.	**5**	**2**

PART - B (5 x 14 = 70 Marks)

		Marks	CO	RBT LEVEL
11. (a)	Elaborate the various physicochemical processes employed for handling solid waste with diagram or flowcharts.	**(14)**	**1**	**3**
	(OR)			
(b)	Explain the various steps or elements involved in the transformation of waste from the point of generation to the final form.	**(14)**	**1**	**3**

12. (a)	Discuss the various exposure pathways for hazardous toxins into the human body. Also discuss the hazardous effects of hazardous wastes.	**(14)**	**2**	**3**
	(OR)			
(b)	Describe the principal methods used for landfilling for municipal solid wastes and layers of a secured landfill to prevent the seepage of leachate into the ground water source.	**(14)**	**2**	**3**
13. (a)	Elaborate the safety measures incorporated in a nuclear plant design to safeguard life. Additionally, analyze the seismic-resistant measures implemented in the design of a nuclear reactor.	**(14)**	**3**	**3**
	(OR)			
(b)	Examine the procedures engaged in the production of nuclear fuel rods, accompanied by a schematic diagram or flowchart.	**(14)**	**3**	**3**
14. (a)	Discuss the salient features, which includes rules and schedules, of the solid waste management rules, 2016.	**(14)**	**4**	**3**
	(OR)			
(b)	Examine the key elements outlined in the Battery Waste Management Regulations of 2022.	**(14)**	**4**	**3**
15. (a)	Discuss various methods utilized in risk assessment and evaluate their effectiveness in different scenarios. Provide examples to illustrate the applicability of each method.	**(14)**	**5**	**3**
	(OR)			
(b)	Examine the process of risk assessment for an waste incineration plant.	**(14)**	**5**	**3**

PART - C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Evaluate the effectiveness of regulations in promoting safe handling, storage, transportation, and disposal of hazardous waste materials. Provide examples of industries or situations where compliance with hazardous waste rules is crucial, and analyze the potential consequences of non-compliance.	**(10)**	**4**	**5**

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