U.S.N.										

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

Autonomous Institute Affiliated to VTU

May / June 2025 Semester End Main Examinations

Programme: B.E. **Semester: VIII**

Branch: Institutional Elective **Duration: 3 hrs.**

Course Code: 23CY8OEEDM **Max Marks: 100**

Course: Environmental Disaster Management and Mitigation

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)	Define (i) ecosystem (ii) Ecological Succession (iii) consumers	CO1	PO1	**6**
	b)	Outline the formation of acid rain and its consequences.	CO1	PO1	**6**
	c)	Classify the radioactive waste and the disposal methods.	CO2	PO4	**8**
		OR			
2	a)	Account for the following (i)Ozone depletion has significant impact on human health (ii)Vitrification is the safest methods for disposing radioactive waste.	CO1	PO1	**6**
	b)	Differentiate with an example (a) consumers and decomposers (b) habitat and Ecosystem	CO1	PO1	**6**
	c)	Compare the working of Scintillation counter and Geiger-Muller counter with a neat diagram.	CO2	PO4	**8**
		UNIT - II			
3	a)	Summarize the determination of Nitrate in water by Colorimetric method.	CO2	PO4	**6**
	b)	50 ml of a hard water sample consumed 15 ml of 0.025 M EDTA for titration. After boiling and cooling, 50 ml of same hard water sample required 12 ml of same EDTA for the titration. Calculate temporary, permanent and total hardness of the hard water.	CO1	PO1	**6**
	c)	Explain the role of any four nanomaterials for the treatment of contaminated water with suitable examples.	CO3	PO7	**8**
		OR			
4	a)	Account for the following (i) Nanotechnology can reduce the cost of water treatment. (ii) Rainwater harvesting can combat groundwater depletion in both rural and urban areas	CO1	PO1	**6**
	b)	Differentiate temporary and permanent hardness of water. Identify the disadvantages of hardness of water.	CO3	PO7	**6**
	c)	Contrast Flash evaporation and reverse osmosis process of desalination with suitable diagrams.	CO2	PO4	**8**

			UNIT - III			
	5	a)	List the sources and control methods for gaseous pollutants.	CO1	PO1	**6**
		b)	Define “criteria air pollutants” and “air quality index”.	CO1	PO1	**6**
		c)	Summarize the role of various components in a sensor with a neat block diagram. Outline the steps involved in the working of NOx gas sensor.	CO2	PO4	**8**
			OR			
	6	a)	Account for the following (i) Monitoring particulate pollution is essential for regulatory measures. (ii) Diesel vehicles tend to produce more particulate matter and nitrogen oxides than gasoline vehicles	CO1	PO1	**6**
		b)	Explain the contribution of oxides of Nitrogen and Sulphur to global warming, smog and acid rain.	CO1	PO1	**6**
		c)	Outline the construction and working of devices used to remove particulate matter from an effluent gas with suitable diagrams..	CO2	PO4	**8**
			UNIT - IV			
	7	a)	Illustrate with examples any two emerging technologies as smart waste management systems.	CO1	PO1	**6**
		b)	What factors should be considered during site selection for a land fill?	CO1	PO1	**6**
		c)	Summarize the various steps involved in recycling of e-waste with relevant chemical reactions.	CO2	PO4	**8**
			OR			
	8	a)	Account for the following (i) Electronics manufacturers must adopt the concept of "design for the environment" in their products. (ii) Monitoring landfill gas emissions is essential to reduce public health impacts.	CO1	PO1	**6**
		b)	Outline the process of extraction of Gold from e-waste	CO3	PO7	**6**
		c)	Compare the techniques involved in the management of solid and liquid hazardous waste.	CO3	PO7	**8**
			UNIT - V			
	9	a)	Outline the construction and working of Quantum dots sensitized solar cell with a neat labelled diagram.	CO2	PO4	**6**
		b)	State any 3 principles of Green Chemistry.	CO1	PO1	**6**
		c)	Define green fuels. Explain the production of Hydrogen by electrolysis with a neat diagram.	CO1	PO1	**8**
			OR			
	10	a)	(i) Quantum dot solar cells are more efficient than conventional solar cells (ii) Atom economy is an important tool for comparing different synthetic routes to the same product.	CO2	PO4	**6**
		b)	Appraise the advantages and disadvantages of hydrogen as a fuel.	CO1	PO1	**6**
		c)	Define atom economy. Calculate the atom economy for CuO in the reaction $Cu + H_2O = CuO + H_2$ Given Cu = 63.5, H=1, O= 16, C=12	CO1	PO1	**8**

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