

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

M.E DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

First Semester

Environmental Engineering

PEVT2401 - Environmental Chemistry

Regulations - 2024

Duration: 3 Hrs

Maximum: 100 Marks

PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Define stoichiometry.	RE	1	2
2.	How does the solubility of CO ₂ in water affect aquatic systems?	AN	1	2
3.	What is partitioning, and why is it significant in environmental chemistry?	UN	2	2
4.	Define coagulation.	RE	2	2
5.	What is the primary cause of ozone layer depletion?	RE	3	2
6.	What are the main chemical components of acid rain?	RE	3	2
7.	Define cation exchange capacity (CEC).	RE	4	2
8.	How is electro kinetic remediation used to remove heavy metals from soil?	AN	4	2
9.	Describe the environmental significance of mercury (Hg) speciation.	UN	5	2
10.	Why nanomaterials are important in environmental applications?	AN	5	2

PART - B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a Explain heavy metal precipitation and its role in environmental management.	UN	1	13
	Or			
	b i Define amphoteric substances and explain the dual nature of amphoteric hydroxides.	RE	1	7
	ii Explain the significance of amphoteric hydroxides in industrial processes and wastewater treatment.	RE	1	6
12.	a Explain the importance of understanding chemical behavior for environmental monitoring and management.	UN	2	13
	Or			
	b Describe the concept of redox zones in aquatic environments and explain how redox conditions affect the behavior and mobility of contaminants.	UN	2	13
13.	a Explain the structure of the atmosphere and its relevance to chemical reactions in different layers.	UN	3	13
	Or			
	b Explain the phenomenon of acid rain, including its chemical formation and effects.	AN	3	13

14.	a	i	Describe the clay structure at the molecular level.	RE	4	6
		ii	Discuss the types and environmental impact of agricultural chemicals in soil.	RE	4	7
			Or			
	b		Explain the methods used for reclamation of contaminated land, with a focus on soil salinity.	AP	4	13
15.	a	i	Describe the chemical speciation of arsenic (As) significance in groundwater contamination.	AN	5	6
		ii	Explain the environmental risks associated with pesticides and the mechanisms by which they impact ecosystems.	AP	5	7
			Or			
	b		Explain the environmental benefits and potential risks associated with using nanocomposites in remediation technologies.	AP	5	13

*PART – C (Marks 1*15 = 15)*

<i>Q.No</i>		<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
16.	a	Explain how pE–pH diagrams constructed and can help predict metal speciation and pollutant stability in different redox environments.	RE	2	15
		Or			
	b	With suitable examples, explain the impact of photochemical reactions and greenhouse gases on air quality and climate.	EV	3	15