

Register No : _____

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

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

Second Semester

Environmental Engineering

EV4011-Environmental Monitoring Instruments

Regulations - 2021

Duration : 3 Hrs

Maximum Marks: 100

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 precision in the context of analytical measurements.	RE	1	2
2.	Give examples of wet chemistry methods used in analytical chemistry.	UN	1	2
3.	State the Beer-Lambert law.	RE	2	2
4.	Why is hydride generation used in AAS?	UN	2	2
5.	State the principle of gas chromatography (GC).	RE	3	2
6.	Name the application of GC-MS in environmental analysis.	RE	3	2
7.	List the type of electrode is commonly used in potentiometry	RE	4	2
8.	Define X-ray Fluorescence (XRF) measure.	RE	4	2
9.	Point out the component of a chemiluminescent NOx analyzer.	UN	5	2
10.	State the principle of fluorescence used in SO2 analyzers.	RE	5	2

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

Q.No		Questions	BLT	CO	Marks
11.	a	Analyze the principles and limitations of titrimetric and gravimetric methods, illustrating each with specific examples.	AN	1	13
		Or			
	b	Analyse the role of method validation in analytical chemistry. Outline the validation process and its importance.	AN	1	13
12.	a	Explicate the principles of spectrophotometry and its applications. Analyze the instrumentation of spectrophotometry and discuss its limitations.	UN	2	13
		Or			
	b	Describe the working principles of a TOC analyzer and its key applications in environmental monitoring.	UN	2	13
13.	a	Analyze the role of GC-MS in identifying and quantifying trace organic contaminants in environmental matrices.	AN	3	13
		Or			

	b	Analyze the significance of ICP-MS in quantifying trace metals within environmental matrices.	AN	3	13
14.	a	Discuss the principles, techniques, and applications of conductometry and potentiometry in environmental analysis.	UN	4	13
		Or			
	b	Elaborate the principles and applications of NAA, XRF, and XRD in environmental analysis.	UN	4	13
15.	a	Enlighten the principles and applications of fluorescence-based analyzers for SO ₂ and particulate matter in environmental analysis.	UN	5	13
		Or			
	b	Compare and contrast the different analytical techniques discussed in this question (NDIR, chemiluminescence, fluorescence, particulate matter analysis, autoanalyzer) in terms of their principles, applications, advantages, and limitations.	UN	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	Propose and justify specific microarray experiments to investigate the impact of industrial pollutants on a local ecosystem.	AP	3	15
		Or			
	b	Illustrate the diverse roles of NMR and ESR spectroscopy across various scientific fields, highlighting key applications.	AP	2	15