

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

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

Sixth Semester

Mechanical Engineering

CME366 - Equipment for Pollution Control

Regulations - 2021

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.	Identify the primary purpose of the Air Act (1981).	AP	1	2
2.	Assess the selection criteria for pollution control equipment.	RE	1	2
3.	Indicate the role of clarifier in water treatment.	AP	2	2
4.	Distinguish between centrifugal and reciprocating pumps.	AN	2	2
5.	Mention the primary mechanism through which cyclone separators separate particles in air pollution control systems.	AP	3	2
6.	State the functions of electrostatic precipitators in air pollution control.	AP	3	2
7.	What role does the filtering medium play in the operation of vacuum filters used in solid waste processing?	RE	4	2
8.	List the types of air classifiers.	RE	4	2
9.	How are discrete water samplers typically operated in the field for sample collection?	RE	5	2
10.	Define the term "flue gas".	RE	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 Assess the challenges faced in the effective implementation of solid waste management rules. Suggest measures and strategies to overcome these challenges for better waste management practices.	EV	1	13
	Or			
	b Evaluate the importance of unit operations and unit processes in mitigating environmental pollution.	EV	1	13
12.	a Assess the design considerations for the effective implementation of flocculators and sand filters in water pollution control.	EV	2	13
	Or			
	b Evaluate the significance of automated chemical dosing systems in modern water treatment plants. Also, analyze the advantages and challenges associated with automated dosing systems compared to manual dosing methods.	EV	2	13

13.	a	Explain the operational principles of wet scrubbers in pollutant removal from industrial exhaust streams.	UN	3	13
		Or			
	b	Illustrate the key design criteria considered in the selection and implementation of bag filters for air pollution control.	UN	3	13
14.	a i	Identify the critical design criteria considered in the selection and implementation of dewatering equipment for solid waste management.	AP	4	6
	ii	Provide examples of dewatering equipment used in solid waste management and explain anyone in detail.	UN	4	7
		Or			
	b i	Illustrate the significance of the pyrolysis process in solid waste management.	UN	4	6
	ii	Explain the operational principles of incinerators and their significance in managing solid waste.	UN	4	7
15.	a i	Compare core samplers and drum thieves principles and the benefits they offer in collecting samples for waste characterization.	UN	5	6
	ii	Explain the role of specialized equipment like core samplers and drum thieves in sampling solid waste from different sources.	UN	5	7
		Or			
	b i	Explain the significance of particulate matter samplers in environmental monitoring.	UN	5	6
	ii	Explain the operational principles and functions of high volume PM samplers.	UN	5	7

*PART – C (Marks 1*15 = 15)*

<i>Q.No</i>		<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
16.	a	Analyze the critical elements and significance of environment impact assessment (EIA) notifications in the regulation framework for development projects, procedural aspects, key components, and the role of stakeholders in ensuring effective environmental management and sustainability.	AN	1	15
		Or			
	b	Examine the critical parameters and methodologies involved in the comprehensive performance assessment of air pollution control equipment. Provide examples or case studies to illustrate your points.	AN	1	15