

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

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

Fifth Semester

Civil Engineering

CE3015- Geo Environmental Engineering

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.	List out the main sources of soil pollution.	RE	1	2
2.	Identify the factors influencing soil pollutant interaction.	AP	1	2
3.	Contrast between diffusion and dispersion.	UN	2	2
4.	Define volatilization.	RE	2	2
5.	Compare soil stabilization and solidification in remediation process.	UN	3	2
6.	State vitrification.	RE	3	2
7.	Outline the main components included in the final cover design of a landfill.	RE	4	2
8.	Explain the role of a geomembrane in a landfill liner system.	UN	4	2
9.	List some waste materials used for soil stabilization.	RE	5	2
10.	Indicate the physical and chemical characteristics of fly ash and its potential reuse in soil stabilization.	UN	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 i Explain the various causes and consequences of soil pollution.	UN	1	7
	ii Classify the different types of waste and explain various waste management strategies.	UN	1	6
Or				
	b i Enumerate the geotechnical problems due to soil –water environment interaction.	UN	1	7
	ii Briefly explain physical and chemical characterization of different wastes.	UN	1	6
12.	a i Illustrate about Ion-exchange process.	UN	2	6
	ii Explain the significance of soil sorption behavior in waste management.	UN	2	7
Or				
	b i Classify the various contaminant retention and transport mechanisms in soil.	UN	2	9
	ii Infer how groundwater contamination can be controlled.	UN	2	4
13.	a Briefly explain the following terms.	UN	3	13
	i. Transport of contaminant in saturated soil			
	ii. Pump & treat method of remediation process			
	iii. In situ flushing and In-situ air sparging remediation			

Or

	b i	Discuss in detail Electro kinetic remediation of contaminated soil.	UN	3	7
	ii	Describe in detail different processes involved in a phytoremediation process.	UN	3	6
14.	a	Identify the source and characteristics of different types of waste typically managed in landfills. Discuss the key criteria for site selection for landfills and the environmental and social considerations involved.	AP	4	13
Or					
	b	Develop the design and purpose of leachate collection systems and final cover designs in landfills. Explain the importance of continuous landfill monitoring and the methods used to ensure compliance with environmental regulations.	AP	4	13
15.	a	Compare and contrast the utilization of industrial byproducts in soil stabilization. Discuss their effectiveness and limitations as soil stabilizers.	UN	5	13
Or					
	b	Discuss the role of scrap tires, wood waste and construction waste in stabilization of soil with their physical and chemical properties.	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	Examine the key components of landfills and explain how each component contributes to the overall functionality and environmental protection of the landfill system.	AN	4	15
Or					
	b	Analyze the physical, chemical and biological characteristics of industrial byproducts. Evaluate their potential for reuse in soil stabilization and the challenges involved in utilizing these waste materials effectively.	AN	5	15