

Code: 20CE6502

III B.Tech - I Semester – Regular Examinations - DECEMBER 2022**ENVIRONMENTAL GEOTECHNIQUES
(HONORS in CIVIL ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.

2. All parts of Question must be answered in one place.

BL – Blooms Level

CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Describe the structural units of clay minerals with neat sketches. Write the difference between Kaolinite mineral and Illite mineral.	L2	CO1	7 M
	b)	Explain the terms (i) Cation Exchange Capacity (ii) Diffuse double layer (iii) Adsorbed water	L2	CO1	7 M
OR					
2	a)	Describe different types of bonding in clay minerals.	L2	CO1	7 M
	b)	Define the term ‘Activity’. Write the activity values for different types of soil.	L2	CO1	7 M
UNIT-II					
3	a)	What factors can affect degree of consolidation? How do you find the degree of consolidation?	L2	CO2	7 M

	b)	What are the assumptions in Terzaghi's one-dimensional consolidation theory?	L2	CO2	7 M
OR					
4	a)	Describe in detail about (i) Gas conductivity, (ii) Ion diffusion capacity.	L2	CO2	7 M
	b)	What is Skempton's pore pressure? Explain the significance of Skempton's pore water coefficients.	L2	CO2	7 M
UNIT-III					
5	a)	Describe in detail factors need to be considered for landfill site characterization and steps to be followed for landfill site selection.	L2	CO3	7 M
	b)	What are the requirements of drainage materials for Filtration and drainage applications?	L2	CO3	7 M
OR					
6	a)	Explain about the chemical characterization methods followed for assessing soil contamination in detail.	L2	CO3	7 M
	b)	Discuss in detail about characteristics of fly ash and its applications in geotechnical projects.	L2	CO3	7 M
UNIT-IV					
7	a)	Differentiate between finite slope and infinite slope with examples.	L2	CO4	7 M

	b)	What are the requirements of compacted clay liners?	L2	CO4	7 M
OR					
8	a)	With neat sketches explain in detail about (i) Top liners, (ii) Bottom Liners and (iii) Side liner for landfills.	L3	CO4	7 M
	b)	What are the parameters required to study the slope stability analysis? Explain in detail about it.	L3	CO4	7 M
UNIT-V					
9	a)	What are various factors to be considered in the design and planning of landfill site?	L3	CO5	7 M
	b)	Explain the mechanism of treating the soils by Electro-Kinetic remediation.	L4	CO5	7 M
OR					
10	a)	Explain in detail about Thermal remediation technique.	L4	CO5	7 M
	b)	Explain about dynamic analysis of landfill liners.	L4	CO5	7 M