BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: M.TECH   SEMESTER : I
BRANCH: CIVIL   SESSION : Mo/2023

SUBJECT: CE515 ADV. SOIL MECH.

TIME: 3 Hours   FULL MARKS: 50

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall. NA

			CO	BL
Q.1(a)	Explain all the factors which contribute to the thickness of the diffused double layer & judge how they affect the geotechnical properties of the soil.	[5]	2	5
Q.1(b)	Write a short note on DTA & SEM & distinguish between their applicability.	[5]	3	4
Q.2(a)	Elucidate all the different factors affecting soil suction.	[5]	1	5
Q.2(b)	Illustrate and explicate the effect of direction of flow on capillary rise w.r.t the capillary rise in tubes of non – uniform diameter. Further, correlate the occurrences of these phenomenon in-situ.	[5]	1	4
Q.3(a)	As a geotechnical engineer, justify on the choice of shear parameters for purposes of design.	[5]	4	6
Q.3(b)	Illustrate and analyze the stress paths in triaxial tests.	[5]	4	4
Q.4(a)	Describe the procedure to calculate the failure conditions in a sample of clay which is iso-tropically normally consolidated to a certain value of normal stress and is then subjected to (i) standard undrained compression test & (ii) standard drained compression test with an initial volume.	[5]	5	5
Q.4(b)	Develop the equation of the Hvorslev surface.	[5]	5	3
Q.5(a)	Discuss regarding the elastic wall.	[5]	5	4
Q.5(b)	Elaborate on the plasticity of soils.	[5]	5	3

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