Total No. of Questions – [3] Total No. of Printed Pages: 02

G.R. No.		PAPER CODE	U223-224 (ESE)

May 2023 (ENDSEM) EXAM

S.Y. B. TECH. (Civil Engineering)

AY 2022-23 SEMESTER - II

COURSE NAME: Geotechnical Engineering

COURSE CODE: CVUA22204

(PATTERN 2020)

Time: [1Hr] [Max. Marks: 30]

(*) Instructions to candidates:

1) **Use of scientific calculator is allowed**
2) **Use suitable data wherever required**
3) **All questions are compulsory**

Question No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) A drained triaxial test on a normally consolidated clay showed that failure plane makes an angle of 58° with the horizontal. If the sample was tested with a chamber confining pressure of 103.5 kN/m², what was the major principal stress at failure?	[4]	[4]	[2]
	b) Compare triaxial compression test and direct shear test? (Minimum 3 points). Identify types of the triaxial tests.	[6]	[4]	[3]
	OR			
	c) Two similar clay soil samples were pre-consolidated in triaxial equipment. Consolidated-drained triaxial tests were conducted on these two specimens. The following are the results of the test. Test 1 - σ_3 = 100 kN/m² σ_d = 410.60 kN/m² Test 2 - σ_3 = 50 kN/m² σ_d = 384.37 kN/m² Determine the value of cohesion c and the angle of internal friction. Also represent the strength parameters in the Mohr's circle.	[6]	[4]	[3]
Q.2	a) State assumption in Rankine's earth pressure theory	[4]	[5]	[1]

	b) A wall of 8 m height has a smooth vertical back and it retains a non- cohesive level back fill with γ = 16 kN/m^3, ϕ = 25^0. Determine the total lateral earth pressure in active state and locate the position of this pressure.	**[6]**	[5]	[3]
	OR			
	c) A retaining wall 9 m high retains a cohesionless soil, with an angle of internal friction 33^0.The surface is level with the top of the wall. The unit weight of the top 3m of the fill is 2.1 t/m^3 and that of the rest is 2.7 t/m^3. Determine the magnitude and point of application of the resultant active thrust.	**[6]**	[5]	[3]
Q.3	a) What do you understand by reinforced earth? Enumerate various applications reinforced earth	**[4]**	[6]	[1]
	b) Describes with figures, the different modes of slope failure.	**[6]**	[6]	[2]
	OR			
	c) Identify the different methods of ground improvement techniques. Explain in detail	**[6]**	[6]	[2]

Note- BT Level 1: Remember 2: Understanding 3: Apply 4: Analyze 5:Evaluate