

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

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

Fifth Semester

Civil Engineering

CE3503–Foundation 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.	Define area ratio.	RE	1	2
2.	List the objectives of soil exploration?	UN	1	2
3.	Define net pressure intensity.	RE	2	2
4.	List the methods of computing elastic settlements.	UN	2	2
5.	Define negative skin friction.	RE	3	2
6.	What is floating foundation?	UN	3	2
7.	Determine the group efficiency using Field's rule for 9 piles in a group.	AN	4	2
8.	Explain single-under reamed pile?	UN	4	2
9.	List any two assumptions of Rankine's theory?	UN	5	2
10.	Draw the lateral earth pressure diagram of clay depend for active condition.	AP	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 Explain in detail about.			
	i) Soil Samplers	UN	1	8
	ii) Bore log	UN	1	5
	Or			
	b Describe the Geo physical method of site exploration with neat sketch.	UN	1	13
12.	a Compute the safe bearing capacity of a circular footing 2.5 m diameter located at a depth of 3 m below ground level in a soil with unit weight of soil is 18 kN/m ³ , C = 23 kN/m ² and angle of friction 35°, FOS = 2.5. Nc = 22.7, Nq= 13 and Ny =12. Find the permissible load meter run when the water table is at a greater depth, footing level and ground level.	AN	2	13
	Or			
	b Explain the plate load test with the analysis of data with neat sketch.	AN	2	13

13.	a	Design a trapezoidal footing for two columns A & B carrying a load of 2000 kN & 1450 kN respectively. The size of column is 0.5 x 0.5m, center to center distance between column is 5.8 m and the allowable soil pressure is 200 kN/m ² .	AN	3	13
		Or			
	b	Classify mat foundation and explain the design principles of mat foundation.	AN	3	13
14.	a	A square group of 16 piles has to be arranged in the form of a square in soft clay of depth 3 m with uniform spacing. The pile diameter is 250 mm and pile spacing is 0.75 m. Unconfined compressive strength of soil is 110 kN/m ² , mobilization factor of 0.6. Calculate the capacity of pile group considering the overall factor of safety 3.	EV	4	13
		Or			
	b	Write the explanatory notes on			
	i)	Under reamed pile	UN	4	7
	ii)	Drag down phenomenon	UN	4	6
15.	a	A retaining wall is 10 m high carries a surcharge load of 14 kN/m ² . Its back is vertical and a sandy backfill up to its top. Determine the active pressure on the wall per metre length of wall and its location. Water table is 4 m below the top of the fill. Dry density of soil = 16.5 kN/m ³ , saturated density of soil = 19.5 kN/m ³ . Angle of internal friction of soil = 30.	AN	5	13
		Or			
	b	Explain the Culmann's graphical method of calculating active earth pressure with neat sketch.	AN	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	Explain Standard penetration test. Also discuss the corrections to be applied for field N value.	AN	2	15
		Or			
	b	Discuss in detail about the Rankine's theory to determine the active and passive earth pressure for cohesive soil.	AN	5	15