Q.P. Code: 16CE127 **R16**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year II Semester Supplementary Examinations July-2021

GEOTECHNICAL ENGINEERING - II

(Civil Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Give a detailed account on how Standard Penetration Test is conducted.	6M
	b	Describe various salient features of a good soil report.	6M

OR

2	a	Describe with a neat sketch how will you carry out the wash boring method of soil exploration.	6M
	b	What are the different purposes of conducting soil exploration?	6M

UNIT-II

3	a	Explain different types of slope failures with neat sketches.	6M
	b	The shearing strength parameters of the soil are $c' = 26.7$ kN/m^2, $\Phi' = 15^o$, $c_m' = 26.7$ kN/m^2 and $\Phi_m' = 12^o$. Calculate the factor of safety (i) with respect to strength (ii) with respect to cohesion and (iii) with respect to friction. The average inter granular pressure on the failure surface is 102.5 kN/m^2.	6M

OR

4		Derive the equation for factor of safety of an infinite slope when soil is dry and cohesionless. What will happen to the factor of safety when the same slope is under submergence.	12M

UNIT-III

5	a	Derive the equation for Rankine's coefficient of active earth pressure.	6M
	b	A smooth backed vertical wall is 6.3 m high and retains a soil with a bulk unit weight of 18 kN/m^3 and $\Phi = 18^o$. The top of the soil is level with top of the wall and is horizontal. If the soil surface carries a uniformly distributed load of 4.5 kN/m^2, draw the earth pressured distribution diagram.	6M

OR

6	a	With the help of a neat sketch explain active, passive and at rest earth pressure.	6M
	b	Determine the stresses at the top and the bottom of the cut for the soil having $\Phi = 12^o$, $c = 20$ kN/m^2 and $\gamma = 18$ kN/m^3. Also determine the maximum depth of potential crack and maximum depth of unsupported excavation.	6M

UNIT-IV

7		Derive Terzaghi's bearing capacity equation for shallow foundation. What are assumptions made?	12M

OR

8	a	Discuss different types of foundation settlements.	6M
	b	Compute the safe bearing capacity of a square footing 1.5 m x 1.5 m, located at a depth of 1 m below the ground level in a soil of average density 20 kN/m^3, $\Phi = 20^o$, $N_c = 17.7$, $N_q = 7.4$ and $N_\gamma = 5.0$. Assume a factor of safety of 2.5 and that the water table is very deep.	6M

UNIT-V

9	a	Explain in detail how ultimate capacity of a single pile driven in sand is estimated using static method.	6M
	b	Classify the piles based on material and load transfer mechanism.	6M
		OR	
10		With a neat sketch explain how pile load test is carried out on a test pile.	12M

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