SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. III Year I Semester Regular & Supplementary Examinations February-2024
FOUNDATION ENGINEERING
(Civil Engineering)

Time: 3 Hours   Max. Marks: 60

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

UNIT-I

1		What are the assumptions of earthpressure theory and derive an expression for Rankines Earth pressure in cohesive soils?	CO1	L2	12M

OR

2		A cantilever retaining wall of 7mts height retains sand. The properties of sand are e=0.5,φ=30^0 and G=2.7.Using Rankines theory Determine the active earth pressure at the base when the backfillis (i) dry (ii) saturated (iii) submerged and also the resultant Active force in each case?	CO1	L3	12M

UNIT-II

3	a	With neat sketches explain different types of shear failures.	CO2	L2	6M
	b	Determine the ultimate bearing capacity of as trip footing, 1.20m wide, and Having the depth of foundation of 1.0 m. use Terzaghi's theory and assume general Shear failure. Takeφ=35°, γ=18kN/m^3,and C'=15kN/m^2. Take(N_c=57.8, $N\gamma$=42.4,N_q=41.4)?	CO2	L3	6M

OR

4		Discuss the various methods of determination of allowable soil pressure in cohesion less soils?	CO2	L2	12M

UNIT-III

5		A precast concrete pile (35cmx35cm) is driven by a single–acting steam hammer. Estimate the allowable load using (i) Engineering News Record Formula (F.S.=6) (ii)Hiley Formula (F.S.=4) and (iii) Danish Formula (F.S. =4).	CO3	L3	12M

Use the following data.

(i)	Maximum rated Energy	=3500kN-m
(ii)	Weight of hammer	=35kN
(iii)	Length of pile	=15m
(iv)	Efficiency of hammer	=0.8
(v)	Coefficient of resistitution	=0.5
(vi)	Weight of pile cap	=3kN
(vii)	No of blows forlast2.54mm	=6
(viii)	Modulus of elasticity of concrete=2 x10^{7}kN/m^2	

Assume any other data, if required. Take the weightofpileas73.5kN.

OR

6	a	A 30cm diameter concrete pile is driven into a homogeneous consolidated clay deposit (c_u=40kN/m^2, α=0.7). If the embedded length is 10m, estimate the safe load (F.S. =2.5).	CO4	L3	6M
	b	A square concrete pile (30cm side) 10 m long is driven into coarse sand (γ=18.5kN/m^3, N=2.0). Determine the allowable load (F.S. =3.0).	CO4	L2	6M

7	Explain the construction of open caisson with the help of neat sketch.	CO5	L2	12M

OR

8	Discuss various forces acting on well foundation.	CO5	L1	12M

UNIT-V

9	Explain the pressure distribution and stability of free cantilever sheet pile with neat sketch.	CO6	L3	12M

OR

10	Explain the stability of anchored sheet piles with free earth support with neat sketch.	CO6	L2	12M

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