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December 2023 (REEXAM)

TY (SEMESTER - I)

COURSE NAME: Foundation Engineering Branch: Civil COURSE CODE: CVUA31204

(PATTERN 2020)

Time: [2 Hrs] **[Max. Marks: 60]**

(*) Instructions to candidates:

1) **Figures to the right indicate full marks.**
2) **Use of scientific calculator is allowed**
3) **Use suitable data wherever required**
4) **All questions are compulsory. Solve any two sub questions each from each Question 1 ,2, 3,4,5,and 6 respectively**

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a)Sampling tube of 15cm internal diameter is 1mm thick ,it is fitted with cutting edge .The inside diameter of cutting edge is flushed with sample tube .The cutting edge is 1.22mm thick , calculate area ratio , inside clearance and outside clearance	[5]	CO1	Apply
	b) In standard Penetration test (SPT) , blow count observed below water table in fine saturated sand is 31 , by using dilatancy correction, calculate corrected blow count and explain necessity of applying this correction	[5]	CO1	Apply
	c) Making use of sketch explain seismic refraction method of soil investigation	[5]	CO1	Apply
Q2	a) A strip footing of width 2m is founded at a depth of 1.5m below ground surface in a soil having Cohesion 21 KN/m^2 , angle of shearing resistance 40 degree ,uniform unit weight of soil =18 KN/m^3 through out the depth ,Calculate Ultimate bearing Capacity and net bearing capacity of soil using Terzaghi's general shear failure Method assume Nc=95.7,Nq=81.3,N_γ=100.4 and water table at depth more than width of footing	[5]	CO2	Apply
	b) Making use of sketch explain general shear failure and local shear failure	[5]	CO2	Apply
	c) Making use of sketch explain effect of water table on bearing capacity of soil	[5]	CO2	Apply
Q3.	a)Explain normally consolidated soil, over consolidated soil and under consolidated soil	[5]	CO3	Understanding
	b) Explain the difference between immediate settlement and primary consolidation settlement	[5]	CO3	Understanding

	c) Explain the causes of settlement of foundation	[5]	CO3	Understanding
Q.4	a)Making use of Feld's rule , explain the procedure to obtain efficiency of pile group	[5]	CO4	Apply
	b) By making use of static method explain the procedure to determine the ultimate bearing capacity of single pile	[5]	CO4	Apply
	c)Identify and write down the situations in which Pile foundations are suitable	[5]	CO4	Apply
Q.5	a) Explain the necessity of coffer dam	[5]	CO5	Understanding
	b) Explain in detail the engineering problems associated with construction of foundation on black cotton soil	[5]	CO5	Understanding
	c) Explain any two methods of soil improvement	[5]	CO5	Understanding
Q.6)	a) Explain the functions of geosynthetic materials	[5]	CO6	Understanding
	b) Explain the mechanism of reinforcement of soil	[5]	CO6	Understanding
	c) Explain following terms with sketch 1)Epicenter 2) focus 3) focal depth 4)Epicentral distance	[5]	CO6	Understanding