

CONTINUOUS INTERNAL EVALUATION- 2

Dept: CV	Sem / Div: 5	Sub: Basic Geotechnical Engg	S Code: 18CV54
Date: 02/12/20	Time: 2.30-4.00pm	Max Marks: 50	Elective: N
Note: Answer any 2 full questions, choosing one full question from each part.			

Q	Questions	Marks	RBT	COs
PART A				
1	a Explain mass-spring analogy of consolidation of soils.	6	L2	CO5
	b Illustrate OCR and its need in consolidation and Explain Casagrande's method of determination of pre consolidation pressure.	10	L2	CO5
	c The time to reach 40% consolidation of a two way drained saturated clay sample of 10 mm thick in the laboratory is 40 secs. Determine the time required for 60% consolidation of the same soil 12m thick on an impervious layer subjected to same loading conditions	9	L3	CO5
OR				
2	a Explain square root of time fitting method for determination of coefficient of consolidation	10	L2	CO5
	b In a consolidation test, the void ratio of soil sample decreases from 1.20 to 1.10 when the pressure increases from 160 to 320 kN/m ² . Determine the coefficient of consolidation. if the coefficient of permeability is 8×10^{-7} mm/sec.	7	L3	CO5
	c A layer of clay 8m thick underlies a proposed new building. The existing overburden pressure at the center of clay is 290kN/m ² and the load due to the new building increases the pressure by 100kN/m ² . $C_c=0.45, w=50\%, G=2.71$. Estimate consolidation settlement	8	L3	CO5
PART B				
3	a Explain the following terms: i) Total stress iii) Effective stress ii) Neutral stress iv) Quick sand condition	5	L2	CO3
	b Explain Electrical diffused double layer and Adsorbed water .	5	L3	CO2
	c Derive an expression for determination of coefficient of permeability by falling head permeability	5	L2	CO3
	d A granular soil deposit is 7m deep over an impermeable layer. The ground water table is 4m below the ground surface. The deposit has a zone of capillary rise of 1.2m with a saturation of 50%. Plot the variations of total stress, pore water pressure and effective stress with the depth of deposit. Take $e=0.6$ and $G=2.65$	10	L3	CO3
OR				
4	a Explain with sketches, the common clay minerals	7	L2	CO2
	b A clay structure of thickness 8m is located at a depth of 6m below the ground surface, it is overlaid by fine sand, the water table is located at a depth of 2m below ground surface. For fine sand submerged unit weight is 10.2 kN/m ³ . The moist unit weight of sand located above water table is 16kN/m ³ . For clay layer $G=2.76$ and $w=25\%$.	10	L3	CO3

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Compute the effective stress at the middle of clay layer			
c Differentiate between : i) Seepage velocity and discharge velocity ii) coefficient of permeability and coefficient of percolation	3	L2	CO3
d Derive an expression for determination of coefficient of permeability by constant head permeability	5	L2	CO3


Prepared by: