

CRM08

Rev 1.10

CV

14/11/2022

CONTINUOUS INTERNAL EVALUATION - 1

Dept: CV	Sem / Div: 5 th	Sub: Basic Geotechnical Engg	S Code: 18CV54
Date: 22/11/2022	Time: 3:00-4:30 PM	Max Marks: 50	Elective: N

Note: Answer any 2 full questions, choosing one full question from each part.

QN	Questions	Marks	RBT	CO's
PART A				
1 a	With the help of three phase diagram, define degree of saturation, void ratio, unit weight of soil solids and water content	8	L2	CO1
b	A sample of saturated clay has a water content of 30% and unit weight of 20kN/m ³ . Determine its dry unit weight, specific gravity, void ratio. If the degree of saturation reduces to 50% what will be its unit weight?	8	L3	CO1
c	With usual notations derive the relation $Y_{sat} = \frac{\gamma_w (G + e)}{1 + e}$	9	L2	CO1
OR				
2 a	With the help of particle size distribution curves, explain well graded, poorly graded, fine grained and coarse grained soils	8	L2	CO1
b	Explain Consistency limits of soil. How do you describe the consistency, if the soil has liquid limit of 55%, plasticity index of 30% and natural water content of 65%	8	L2	CO1
c	A moist soil sample has a weight of 6.33 N and volume of 3 x 10 ⁵ mm ³ at a water content of 11%. Take Specific	9	L3	CO1

gravity as 2.68, Find void ratio, air content (n_a) degree of saturation. Also determine water content at which soil gets saturated. What will be the unit weight at saturation

PART B

3 a What are the differences between standard and modified proctor test? Calculate the compactive energy applied in both the tests. 7 L2 CO2

b Following are the observations of a compaction test 10 L3 CO2

Water content %	5.9	7.5	9.7	11.65	13.85
-----------------	-----	-----	-----	-------	-------

Weight of Wet soil N	18.2	19.5	20.1	20	19.7
----------------------	------	------	------	----	------

Take volume of mould = 1000cc, $Y_w = 10$ kN/m³ and $G = 2.7$. plot compaction curve and find ODD and OMC. Calculate the void ratio, degree of saturation and percentage air voids at OMC

c Explain the factors affecting on compaction 8 L2 CO2

OR

4 a List and explain different types of clay minerals 7 L2 CO2

b What is the effect of compaction on soil properties? 8 L2 CO2

c Following are the observations of a compaction test 10 L3 CO2

Water content %	5.9	7.5	9.7	11.65	13.85
-----------------	-----	-----	-----	-------	-------

Dry density of soil kN/m ³	18.2	19.5	20.1	20	19.7
---------------------------------------	------	------	------	----	------

If specific gravity of soil is 2.7, i) plot compaction curve and find OMC and ODD ii) what is the range of water content that can be allowed to achieve dry density of 16.8kN/m³ at site.

Sowmya

Prepared by: Dr. Sowmya NJ

AK
HOD