Vivekananda College of Engineering & Technology, Puttur
[A Unit of Vivekananda Vidyavardhaka Sangha Puttur ®]
Affiliated to VTU, Belagavi & Approved by AICTE New Delhi

CRM08   Rev 1.10
                                              CV   17/10/2020

CONTINUOUS INTERNAL EVALUATION- 1

Dept: CV   Sem / Div: 5 th   Sub:Basic Geotechnical Engg   S Code:18CV54
Date:20/10/2020 Time:2.30-4.00PM Max Marks: 50   Elective: N

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

QN	Questions	Marks	RBT	COs
	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	5	L2	CO1
b	A sample of saturated clay has a water content of 30% and unit weight of $20 kN/m^3$. 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 $$Y_{sat}=$$	5	L2	CO1
d	For a given sandy soil, $e_{max}= 0.82$ and $e_{min}= 0.42$. Let $G= 2.66$, in the field, the soil is compacted to a moist unit weight of $16.87 kN/m^3$ at a moisture content of 9%. Determine void ratio, porosity, degree of saturation and relative density.	7	L3	CO1
	OR			
2 a	What are index properties? List various index properties	4	L2	CO1
b	With the help of particle size distribution curves, explain well graded, poorly graded, fine gained and coarse grained soils	5	L2	CO1
c	A moist soil sample hias a weight of 6.33 N and volume of 3×10^5 mm^3 at a water content of 11%. Take Specific 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	8	L3	CO1
d	The following results of a liquid limit test	8	L3	CO1

Number of blows	33	23	18	11
Water content%	41.5	49.5	51.5	55.6

If the plastic limit is 23.5% , determine plasticity index and flow index

	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 dry soil N	18.2	19.5	20.1	20	19.7

Take volume of mould =1000cc, $Y_w=10 kN/m^3$ 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	What do you understand by field control of compaction? Explain	7	L2	CO2

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proctor needle method.							8	L2 CO2
b What is the effect of compaction on soil properties?.							10	L3 CO2

c If specific gravity of soil is 2.7, i) plot compaction curve and find OMC and ODD ii) plot 20% air void line, iii) what is the range of water content that can be allowed to aciive dry density of $16.8 kN/m^3$ at site.

w.c. w%	8.5	12.2	13.7	15.5	18.2	20.2
γ_d kN/m3	20.6	18.8	18.1	17.4	16.4	15.74

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