Roll No. _____

END SEMESTER EXAMINATION
SEMESTER- III

COURSE CODE : CE407 **DURATION : 3 (THREE)HRS**
COURSE TITLE : GEOTECHNICAL ENGINEERING-I **MAXIMUM MARKS : 75**
SESSION : JULY-DEC.' 2021 **PASS MARKS : 35 %**

NOTE: *1. Attempt any 5 (five) questions.*
2. Mark for each question is shown against it.
3. Assume suitable logical data wherever necessary.

1.	**(a)**	What is pedogenesis? Explain the formation of soil by weathering involving two types of process.	**(6)**
	(b)	One Kg of soil was sieved through a set of 8 sieves with the size 4.75 mm, 2.00 mm, 600 µ, 425 µ, 300 µ, 212 µ, 150 µ and 75 µ. The mass of soil retained on these sieves was found to be 50, 78, 90, 150, 160, 132, 148, and 179 gm. determine the percentage finer than the corresponding sizes.	**(6)**
	(c)	List out the types of soil and its agent.	**(3)**
2.	**(a)**	Define coefficient of curvature and Coefficient of uniformity. Identify the type of sand having D_{10} =2 mm, D_{30} =4 mm and D_{60} =2.6 mm.	**(7)**
	(b)	Explain three phase system of soil with a neat diagram.	**(5)**
	(c)	Define: (i) Liquid limit ii) Plastic limit iii) Shrinkage limit	**(3)**
3.	**(a)**	A cube of dried clay having sides 4 cm long weighs 110 gm. The same cube of soil, when saturated at unchanged volume, weighs 135 gm. Determine the specific gravity of soil solid and the void ratio.	**(5)**
	(b)	Write a brief procedure for the conduct of constant head permeability test.	**(5)**
	(c)	What is consistency limits? Explain with neat graph.	**(5)**
4.	**(a)**	Briefly describe the particle arrangement in composite soil.	**(5)**
	(b)	A soil sample has porosity of 35 percent. The specific gravity of solids is 2.65. Calculate (i) Void ratio, (ii) dry density, (iii) unit weight if the soil is 50 percent saturated and (iv) unit weight if the soil is completely saturated.	**(10)**
5.	**(a)**	Define head and gradient. Write short note on all the factors effecting permeability.	**(10)**
	(b)	Enumerate the difference between seepage pressure and seepage velocity.	**(5)**
6.	**(a)**	A soil has a plastic limit of 32.5% and a plasticity index of 40. If the natural water content of soil is 40%, What is the liquidity index and what is the consistency index? How do you describe the consistency index?	**(5)**
	(b)	Write a brief procedure for the conduct of constant head permeability test.	**(10)**
7.	**(a)**	Write down the procedure for Indian standard light compaction test.	**(10)**
	(b)	Briefly describe the various methods for field compaction.	**(5)**
8.	**(a)**	Explain maximum dry density, optimum moisture content with a suitable graph indicating zero air void line.	**(7)**
	(b)	Define: (i) Normally consolidated clay ii) Over consolidated clay (iii) Under consolidated clay	**(3)**
	(c)	Briefly explain the textural classification of soil.	**(5)**

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