JAIPUR ENGINEERING COLLEGE & RESEARCH CENTRE
DEPARTMENT OF CIVIL ENGINEERING

Slow learner Student's Assignment 1

Q.1 Explain Specific gravity?

Q.2 Explain submerged unit weight?

Q.3 What are any four type of transported soil?

Q.4 What do you understand by Liquid limit?

Q.5 Explain Void ratio, Porosity , Water content , degree of saturation and percentage air content ?

A 588 cm3 volume of moist sand weights 1010 gm. It dry weight is 918 gm and specific gravity of solids, is 2.67. Assuming density of water as 1 gm/cm3, the void ratio is?

Q.6 The bulks unit weight of soil is 19.10 KN/m^2 and water content is 12.5%,specific gravity of soil is 2.67,Determine:

(i) Void Ratio

(ii) Porosity

Q.7 Explain Void ratio, Porosity , Water content , degree of saturation and percentage air content Plot a diagram showing Total cost, fixed cost and variable cost. Also describe each.

Q.8 Explain shrinkage limit?

Q.9 Derive the relation between submerged unit weight and saturated unit weight?

Q.10 What are any four type of transported soil?

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Slow learner Student's Assignment 2

Q.1 What is darcy's law of permeability?

Q.2 What is Isobar diagram?

Q.3 What is Quick sand condition?

Q.4 What are the different types of lateral earth pressure? Explain each type with the help of schematic diagram showing the variation of earth pressure with the wall movement?

Q.5 Explain Darcy's law and derive the permeability expression by falling head method?

Q.6 A concentrated load of 50KN acts on the surface of a homogeneous soil mass of large extent. Determine the stress intensity at a depth of 5m.

(i) Directly under the load

(ii) At a horizontal distance of 2.5m

Q.7 A stratum of fine sand has porosity of 40% and specific gravity of 2.70. The ground water table is 4 m below the ground surface and the sand is saturated by capillary water upto a height of 1m due to the water table. The degree of saturation of the sand upto 3 m below the ground surface is 10% . The total stress pore water pressure and effective stress respectively at a depth of 8m below the ground surface is ?

Q.8 A sand stratum is 8m thick has a porosity of 43% and specific gravity of particle

2.70. The ground water table is 3m below the ground surface and the capillary rise above water table is 1m. The effective stress at the bottom of sand stratum is?

Q.9 A soil profile consists of a surface layer of fine sand 6m thick with unit weight of 16.5 kN/m^3 and clay layer of 8m thick beneath the sand layer. The water table is located at a depth of 4m below the ground surface. The submerged unit weight of fine sand is 10.4 kN/m^2. For clay layer the specific gravity is 2.70 and water content is 30%.

Effective stress at the middle of clay layer is?

Q.10 01.The capillary rise difference in fine sand and silt was found to be 3.6 m. Surface tension is 75×10^{-6} kN/m and unit weight of water is 10 kN/m^3. If the capillary rise in fine sand is 0.4 m, the difference in size of voids of the two soils is?

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Slow learner Student's Assignment 3

Q 1 Explain terzaghi's bearing capacity?

Q 2 Explain Consistency of soil with diagram?

Q 3 Derive the co-efficient of consolidation?

Q 4 Explain the theory of earth pressure ?

Q 5 A soil sample has a water content of 18%. The specific gravity of soil mass is 1.8 and the specific gravity of soil particles is 2.70. The void ratio of the soil is ?

Q 6 If the mass specific gravity of dry soil sample is 1.8 and the specific gravity of soil particles is 2.7 , then the void ratio is?

Q 7 A soil sample has volume of 100 cm3 and weight of 196 g got reduced to 164 g after oven drying. If the specific gravity of soil is 2.70, the void ratio is?

Q 8 A soil sample of weight 156 g and 80 cm3 volume is reduced to 130 g on oven drying. If the specific gravity of soil sample is 2.64, the degree of saturation is?

Q 9 A soil sample has a water content of 18%. The specific gravity of soil mass is 1.8 and the specific gravity of soil particles is 2.70. The void ratio of the soil is?

Q 10 If the mass specific gravity of dry soil sample is 1.8 and the specific gravity of soil particles is 2.7 , then the void ratio is?

Q 11 A soil sample consists of spherical grains of same diameter arranged in a cubical array. The maximum void ratio is?

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Slow learner Student's Assignment 4

Q 1 Explain the swedish circle?

Q 2 Explain the mayrehoff theory for bearing capacity?

Q 3 Derive the stress equation by bousinesq?

Q 4 A sample of 500 g dry sand, when poured into a 2 litre capacity cylinder which is partially filled with water, displaces 188 cm3 of water. The density of water is 1 g/cm3. The specific gravity of the sand is GATE CE 2020?

Q 5 A soil has dry unit weight of 15.5 kN/m3, specific gravity of 2.65 and degree of saturation of 72%. Considering the unit weight of water as 10 kN/m3, the water content of the soil (in %, round off to two decimal places) is….. GATE CE 2020?

Q 6 A soil has specific gravity of its solids equal to 2.65. The mass density of water is 1000 kg/m3. Considering zero air voids and 10% moisture content of the soil sample, the dry density (in kg/m3, round off to 1 decimal place) would be…. GATE CE1 2019

Q 7 The porosity ( ) and the degree of saturation ( ) of a soil sample are 0.7 and 40% respectively. In a 100 m3 volume of the soil, the volume (expressed in m3) of air is….. GATE CE1 2016?

Q 8 A 588 cm3 volume of moist sand weights 1010 gm. It dry weight is 918 gm and specific gravity of solids, is 2.67. Assuming density of water as 1 gm/cm3, the void ratio is …. GATE CE2 2015?

Q 9 In its natural condition, a soil sample has a mass of 1.980 kg and a volume of 0.001 m3. After being completely dried in an oven, the mass of the sample is 1.800 kg. Specific gravity G is 2.7. Unit weight of water is 10 kN/m3. The degree of saturation of the soil is : GATE CE 2013?

Q 10 The water content of a saturated soil and the specific gravity of soil solids were found to be 30% and 2.70, respectively. Assuming the unit weight of water to be 10 kN/m3, the saturated unit weight (kN/m3), and the void ratio of the soil are GATE CE 2007?

Q 11 The ratio of saturated unit weight to dry unit weight of soil is 1.25. If the specific gravity of solids ( ) is 2.56, the void ratio of the soil is GATE CE 2004?

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