

Homework

Q1 A sample of soil has a total density (ρ) = 1.76 Mg / m³ and has water content ω = 10%. Compute ρ_d , e , n , degree of saturation (S), and saturation density ρ_{sat} ?

Q2 Given 1870gm of wet soil compacted into a mold with a volume of 1000 cc. The soil put in the oven and dried to a constant weight of 1677 gm. The specific gravity G_s is to be 2.66. Find ω , γ_d , n , S_r and γ_{sat} ?

Q3 Find the void ratio and dry unit weight for the soil which n = 0.32 and G_s = 2.7 ?

Q4 Soil sample has e = 1.2, S_r 70% and G_s = 2.65. Find air and water content ?

Q5 The saturation unit weight of the clay is 1.95 gm / cm³. After drying unit weight becomes 1.62 gm / cm³ and G_s = 2.72. Find the volumetric change ?

Q6 For 3 m³ of soil in its natural state weighing (45.7) KN and after being dried its weight equal to (37.85) KN, G_s = 2.7. Determine S , e , n , and ω % for soil as it existed in its natural state.

Q7 A silty clay soil with ρ_s = 2700 kg/m³, V_s = 1m³, S = 100% and the water content (ω) = 46%. Determine the void ratio (e), density saturation (ρ_{sat}), and the buoyant or submerged density in kg/m³.

***Benefit from the following relationship $e = (\omega * \rho_s) / (\rho_w * S)$**