CALCULATIONS

i) The weight of sand (W_a) in gram, required to fill the calibrating container should be calculated from the formula:

$$W_a = W_1 - W_3 - W_2$$

ii) The bulk density of the sand (γ_s) in kg/m^3 should be calculated from the formula:

$$\gamma_s = \frac{W_a}{V} \times 1000$$

iii) The weight of sand (W_b) in gram, required to fill the excavated hole should be calculated from the formula:

$$W_b = W_1 - W_4 - W_2$$

iv) The bulk density (γ_b), that is, the weight of the wet soil per cubic meter should be calculated from the formula:

$$\gamma_b = \frac{W_w}{W_b} \times \gamma_s \text{ kg/m}^3$$

v) The dry density (γ_d), that is, the weight of dry soil per cubic meter should be calculated from the formula:

$$\gamma_d = \frac{100\gamma_b}{100 + w} \text{ kg/m}^3$$

$$\gamma_d = \frac{W_d}{W_b} \times \gamma_s \text{ kg/m}^3$$