

1. *Data :*

Wt. of saturated soil = 550 g

Wt. of oven – dry soil = 350 g

Total volume = 300 cm³

a. Determine the bulk density.

$$B.D. = \frac{(\text{Oven-dry Weight})}{\text{Volume}} = \frac{(350 \text{ g})}{(300 \text{ cm}^3)} = 1.17 \left(\frac{\text{g}}{\text{cm}^3} \right)$$

b. What is the percent water by volume ?

$$\% \text{ water} = \frac{(\text{Wet Weight} - \text{Dry Weight})}{(\text{Dry Weight})} = \frac{(550 \text{ g} - 350 \text{ g})}{(350 \text{ g})} = 0.571 \rightarrow 57.1 \%$$

c. What is the percent water by volume ?

$$\% \text{ by Weight} \times B.D. = 0.571 \times 1.17 = .6666 \rightarrow 66.7 \%$$

d. What is the percent pore space based on the % moisture at saturation ?

Since the soil is saturated all the pores are filled with water. Therefore, % pore space is the same as % water by volume in the sample → 66.7 %