A sample of saturated clay was placed in a container and weighed. The weight was 6N. The clay in its container was placed in an oven dry for 24 hours at 105\(^{\circ}\)C. The weight reduced to a constant weight of 5N. The weight of the container is 1N. If \(G_s = 2.7\), Determine:

(a) Water content.
(b) Void ratio.
(c) Moist unit weight.
(d) Dry unit weight.

\[
W_{\text{can+wet soil}} = 6N, W_{\text{can+dry soil}} = 5N, W_{\text{can}} = 1N \rightarrow W = 6 - 1 = 5N, W_s = 4N
\]

**Given:**

\(G_s = 2.7\)

**Required:** \(w, e, \gamma_{\text{moist}}, \gamma_{\text{dry}}\)

**Solution:**

\[
\begin{align*}
\bullet w &= \frac{W_w}{W_s} = \frac{W_T - W_s}{W_s} = \frac{(5 - 4)\times 100}{4N} = 25\% \\
\bullet e &= \frac{wG_s}{S} = \frac{0.25 \times 2.7}{1} = 0.675 \\
\bullet \gamma_{\text{moist}} &= \frac{(1 + w)\gamma_{w}}{1 + e} = \frac{(1 + 0.25) \times 2.7 \times 9.81(KN/m^3)}{1 + 0.675} = 19.766KN/m^3 \\
\bullet \gamma_{\text{dry}} &= \frac{\gamma_{w}}{1 + w} = \frac{19.766(KN/m^3)}{1 + 0.25} = 15.813KN/m^3
\end{align*}
\]