Answer on Question #66033 - Chemistry - General Chemistry

Your standardisation of the NaOH concentration gave a [NaOH] of 0.0147 M.

The average titre of NaOH with acetic acid for your experiment was 12.35 mL.

Final calculations:
2) Calculate the concentration of acetic acid in your dressing using n=cv and then c1v1=c2v2 (10.0 mL of dressing was diluted to 100 mL)?

Solution:

The chemical reaction between sodium hydroxide and acetic acid is

$NaOH + CH_3COOH \rightarrow CH_3COONa + H_2O$

At the equivalent point the number of moles of NaOH equals the number of moles of acetic acid. It means that:

n (NaOH) = n(CH_3COOH), where n is number of moles.

We know that molar concentration C = $\frac{n}{V}$. So n = C·V.

Using last formulae:

C (NaOH)·V(NaOH) = C(CH_3COOH)·V(CH_3COOH)

We can calculate the concentration of acetic acid using previous proportion:

$C(CH_3COOH) = \frac{C(NaOH) \cdot V(NaOH)}{V(CH3COOH)}$

According to our experimental data:

$C(CH_3COOH) = \frac{0.0147 \cdot 12.35}{10.0} = 0.0182$ (mol/l)

Answer: C(CH_3COOH) = 0.0182 (mol/l).