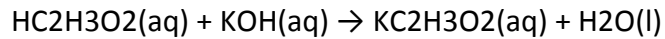## Answer on Question #49742 - Chemistry – Other

Question

If 28.7mL of 0.205M KOH is required to completely neutralize 20.0mL of a HC2H3O2 solution, what is the molarity of the acetic acid solution?

HC2H3O2(aq) + KOH(aq) → KC2H3O2(aq) + H2O(l)

Answer:

According to the reaction, 1 mole of acetic acid reacts with 1 mole of KOH, therefore, if $HC_2H_3O_2$ is completely neutralized, there are no moles of $HC_2H_3O_2$ in solution, so number of moles of KOH required to completely neutralize acetic acid is equal to initial number of moles of the acid:

$$n(KOH) = n(HC_2H_3O_2)$$

Number of moles of substance in solution equals:

$$n = CV$$

$$C(KOH) \cdot V(KOH) = C(HC_2H_3O_2) \cdot V(HC_2H_3O_2)$$

Molar concentration or molarity of acetic acid solution equals:

$$C(HC_2H_3O_2) = C(KOH) \cdot V(KOH) / V(HC_2H_3O_2) = 0.205 \cdot 28.7 / 20.0 = 0.294 \text{ M}$$

Answer: 0.294 M