Question #75403, Chemistry / Physical Chemistry / Completed

5 gm impure calcium hydroxide is dissolved into 800 ml of water me of this solution 20 ml of decinormal HCl is added . The acidic solution formed is neutralized by 50 ml of N/50 ml of NaOH solution. Percentage purity of Ca(OH)2 is
(1) 44% (2)5.92%. (3)14.34%. (4)7.5%

Solution:

NaOH + HCl = NaCl + HOH

n (NaOH) = 0.050 L x N/50 mole/L = 0.001 mole

n (HCl) = n (NaOH) = 0.001 mole – reacts with NaOH

0.02 L x 0.1 M = 0.002 mol HCl – was in the solution

Δ = 0.002 – 0.001 = 0.001 mol – reacts with $Ca(OH)_2$

Ca(OH)2 + 2HCl = CaCl2 + 2HOH

n (Ca(OH)2) = ½ 0.001 mol = 0.0005 mol

m = 0.0005 mol x 40 g/mol = 0.02 g

0.02 / 5 g x 100 % = 0.4 %.

Answer: 0.4 %.