Answer on Question # 65529 - Chemistry | General Chemistry

What is the molar concentration of solution of 162.8g of calcium hydroxide dissolved completely in 1000cm cube of distilled water (Ca=40,O=16,H=1)

Solution

m($Ca(OH)_2$) = 162.8 g

V= 1000 cm^3 = 1 L

$$\mathrm{C} = \frac{\mathrm{n}}{\mathrm{V}} \qquad\qquad \mathrm{n} = \frac{\mathrm{m}}{\mathrm{M}}$$

M($Ca(OH)_2$) = 40+2•16+2•1=74 g/mol

$$\mathrm{n} = \frac{\mathrm{m}}{\mathrm{M}} = \frac{162.8\ \mathrm{g}}{74\ \frac{\mathrm{g}}{\mathrm{mol}}} = 2.2\ \mathrm{mol}$$

$$\mathrm{C} = \frac{\mathrm{n}}{\mathrm{V}} = \frac{2.2\ \mathrm{mol}}{1\ \mathrm{L}} = 2.2\mathrm{mol/L} = 2.2\mathrm{M}$$

Answer

The molar concentration must be 2.2 mol/L or 2.2 M.