Answer on Question #50735 – Chemistry – Physical Chemistry

Question:

Mole fraction of solute in aqueous solution of 30% NaOH.

(1) 0.16

(2) 0.05

(3) 0.25

(4) 0.95

Answer:

Assume 100g of solution and in it we have 30g of NaOH and 70g H_2O.

Then

$$30g\ NaOH * \frac{1mol\ NaOH}{40.00g\ NaOH} = 0.75mol\ NaOH$$

$$70.0g\ H_2O * \frac{1mol\ H_2O}{18.02g\ H_2O} = 3.88mol\ H_2O$$

The mole fraction is the ratio of amount of constituent to total amount of substance.

So

0.75 / (0.75+3.88) = 0.750 / 4.63 = 0.16

Answer: (1) 0.16