Answer on Question #84094, Chemistry / General Chemistry

Calculate number of moles of drink mix powder needed, number of grams of drink mix powder needed, grams of solute and solvent needed. Molarity, and percent by mass for each of the 3 scenarios: using drink mix powder has molar mass same as $C_6H_{12}O_6$, solution 100ml of water in 0.2M solution, in 0.5M solution and 0.8M of solution

Answer

1) 100 ml of 0.2M solution contain **0.02 mol** of drink mix powder.

$m_{powder} = 0.02 \times 180 =$ **3.6 (g)** $= m_{solute}$

$m_{solvent} =$ **100 g**

$w_{powder} = \frac{3.6}{100+ 3.6} \times 100\% =$ **3.47%**

2) 100 ml of 0.5M solution contain **0.05 mol** of drink mix powder.

$m_{powder} = 0.05 \times 180 =$ **9 (g)** $= m_{solute}$

$m_{solvent} =$ **100 g**

$w_{powder} = \frac{9}{100+ 9} \times 100\% =$ **8.26%**

3) 100 ml of 0.8M solution contain **0.08 mol** of drink mix powder.

$m_{powder} = 0.08 \times 180 =$ **14.4 (g)** $= m_{solute}$

$m_{solvent} =$ **100 g**

$w_{powder} = \frac{14.4}{100+ 14.4} \times 100\% =$ **12.6%**