

Answer on Question#55237 – Chemistry – General Chemistry

Question:

How much glucose, $C_6H_{12}O_6$, in grams, must be dissolved in water to produce 32.5 mL of .450 M $C_6H_{12}O_6$?

Solution:

$$V = 0.0325 \text{ L};$$

$$C(C_6H_{12}O_6) = 0.45 \text{ M};$$

$$M(C_6H_{12}O_6) = 180 \text{ g}\times\text{mol}^{-1};$$

$$m(C_6H_{12}O_6) - ?$$

$$C = \frac{v}{V};$$

v – The number of moles (mol);

C – The molar concentration (M);

V – The volume of the solution (L);

$$v = CV;$$

$$v = \frac{m}{M};$$

m – The mass (g);

M – The molar mass ($\text{g}\times\text{mol}^{-1}$);

$$m = vM;$$

$$v = CV;$$

$$m = CVM;$$

$$m = 0.45 \times 0.0325 \times 180 = 2.6325 \text{ g};$$

Answer: 2.6325 g