

LISTA 1

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pode deixar em cm^3 , mL

$$\textcircled{1} \text{ a) } v = (50,0 \text{ kg}) \times \left(\frac{1 \text{ cm}^3}{2,699 \text{ g}} \right) \times \left(\frac{10^3 \text{ g}}{1 \text{ kg}} \right) = 18,5 \times 10^3 \text{ cm}^3 \left(\frac{1 \text{ L}}{10^3 \text{ cm}^3} \right) = 18,5 \text{ L}$$

$$\text{b) } v = (50,0 \text{ kg}) \times \left(\frac{1 \text{ cm}^3}{11,35 \text{ g}} \right) \times \left(\frac{10^3 \text{ g}}{1 \text{ kg}} \right) \times \left(\frac{1 \text{ L}}{10^3 \text{ cm}^3} \right) = 4,40 \text{ L}$$

$$\text{c) } v = (50,0 \text{ kg}) \times \left(\frac{1 \text{ cm}^3}{7,31 \text{ g}} \right) \times \left(\frac{10^3 \text{ g}}{1 \text{ kg}} \right) \times \left(\frac{1 \text{ L}}{10^3 \text{ cm}^3} \right) = 6,84 \text{ L}$$

$$\textcircled{2} \text{ Amostra A: } \rho = \left(\frac{201,8 \text{ g}}{250 \text{ mL}} \right) \times \left(\frac{1 \text{ mL}}{1 \text{ cm}^3} \right) = 0,807 \text{ g/cm}^3 \text{ - dentro da especificação}$$

$$\text{Amostra B: } \rho = \left(\frac{205,8 \text{ g}}{250 \text{ mL}} \right) \times \left(\frac{1 \text{ mL}}{1 \text{ cm}^3} \right) = 0,823 \text{ g/cm}^3 \text{ - FORA da especificação}$$

$$\textcircled{3} \text{ a) } m = (3,50 \text{ mol}) \times \left(\frac{12,01 \text{ g}}{1 \text{ mol}} \right) = 42,0 \text{ g}$$

$$v = (3,50 \text{ mol}) \times \left(\frac{3,42 \text{ cm}^3}{1 \text{ mol}} \right) = 12,0 \text{ cm}^3$$

$$\text{b) } m = (3,50 \text{ mol}) \times \left(\frac{18,04 \text{ g}}{1 \text{ mol}} \right) = 63,1 \text{ g}$$

$$v = (3,50 \text{ mol}) \times \left(\frac{18,06 \text{ cm}^3}{1 \text{ mol}} \right) = 63,2 \text{ cm}^3$$

$$\text{c) } m = (3,50 \text{ mol}) \times \left(\frac{46,07 \text{ g}}{1 \text{ mol}} \right) = 161 \text{ g}$$

$$v = (3,50 \text{ mol}) \times \left(\frac{58,4 \text{ cm}^3}{1 \text{ mol}} \right) = 204 \text{ cm}^3$$

$$\textcircled{4} \text{ a) } n = (500 \text{ g}) \times \left(\frac{1 \text{ mol}}{58,44 \text{ g}} \right) = 8,56 \text{ mol}$$

$$\text{b) } n = (500 \text{ g}) \times \left(\frac{1 \text{ mol}}{111,0 \text{ g}} \right) = 4,50 \text{ mol}$$

$$c) n = (500 \text{ g}) \times \left(\frac{1 \text{ mol}}{142,1 \text{ g}} \right) = 3,52 \text{ mol}$$

$$5) a) n = (200 \text{ L}) \times \left(\frac{1 \text{ mol}}{58,4 \text{ cm}^3} \right) \times \left(\frac{10^3 \text{ cm}^3}{1 \text{ L}} \right) = 3,42 \times 10^3 \text{ mol}$$

$$b) n = (200 \text{ L}) \times \left(\frac{1 \text{ mol}}{106 \text{ cm}^3} \right) \times \left(\frac{10^3 \text{ cm}^3}{1 \text{ L}} \right) = 1,89 \times 10^3 \text{ mol}$$

$$c) n = (200 \text{ L}) \times \left(\frac{1 \text{ mol}}{90,5 \text{ cm}^3} \right) \times \left(\frac{10^3 \text{ cm}^3}{1 \text{ L}} \right) = 2,48 \times 10^3 \text{ mol}$$

$$6) a) n_{\text{ent}} = (0,50 \text{ mol}) \times \left(\frac{6,02 \times 10^{23} \text{ entidades}}{1 \text{ mol}} \right) = 3,0 \times 10^{23} \text{ entidades}$$

$$b) n_{\text{ent}} = (1,25 \text{ mol}) \times \left(\frac{6,02 \times 10^{23} \text{ entidades}}{1 \text{ mol}} \right) = 7,52 \times 10^{23} \text{ entidades}$$

$$c) n_{\text{ent}} = (14,0 \text{ mol}) \times \left(\frac{6,02 \times 10^{23} \text{ entidades}}{1 \text{ mol}} \right) = 8,43 \times 10^{24} \text{ entidades}$$

$$7) a) n = (1,00 \times 10^{24} \text{ entidades}) \times \left(\frac{1 \text{ mol}}{6,02 \times 10^{23} \text{ entidades}} \right) = 1,66 \text{ mol}$$

$$b) n = (1,33 \times 10^{19} \text{ entidades}) \times \left(\frac{1 \text{ mol}}{6,02 \times 10^{23} \text{ entidades}} \right) = 2,21 \times 10^{-5} \text{ mol}$$

$$c) n = (3,57 \times 10^{22} \text{ entidades}) \times \left(\frac{1 \text{ mol}}{6,02 \times 10^{23} \text{ entidades}} \right) = 5,93 \times 10^{-3} \text{ mol}$$

$$8) a) n_{\text{molec}} = (10 \text{ g}) \times \left(\frac{1 \text{ mol}}{342,3 \text{ g}} \right) \times \left(\frac{6,02 \times 10^{23} \text{ moléculas}}{1 \text{ mol}} \right) = 1,8 \times 10^{22} \text{ moléculas}$$

$$b) n_{\text{molec}} = (10 \text{ g}) \times \left(\frac{1 \text{ mol}}{60,0 \text{ g}} \right) \times \left(\frac{6,02 \times 10^{23} \text{ moléculas}}{1 \text{ mol}} \right) = 1,0 \times 10^{23} \text{ moléculas}$$

$$c) n_{\text{molec}} = (10 \text{ g}) \times \left(\frac{1 \text{ mol}}{78,1 \text{ g}} \right) \times \left(\frac{6,02 \times 10^{23} \text{ moléculas}}{1 \text{ mol}} \right) = 7,7 \times 10^{22} \text{ moléculas}$$

$$9) a) n_{\text{molec}} = (25,0 \text{ ml}) \times \left(\frac{0,789 \text{ g}}{1 \text{ cm}^3} \right) \times \left(\frac{1 \text{ cm}^3}{1 \text{ ml}} \right) \times \left(\frac{1 \text{ mol}}{46,07 \text{ g}} \right) \times \left(\frac{6,022 \times 10^{23} \text{ moleculas}}{1 \text{ mol}} \right)$$

$$n_{\text{molec}} = 2,58 \times 10^{23} \text{ moleculas}$$

$$b) n_{\text{molec}} = (3,10 \text{ L}) \times \left(\frac{1,48 \text{ g}}{1 \text{ cm}^3} \right) \times \left(\frac{10^3 \text{ cm}^3}{1 \text{ L}} \right) \times \left(\frac{1 \text{ mol}}{119,4 \text{ g}} \right) \times \left(\frac{6,022 \times 10^{23} \text{ moleculas}}{1 \text{ mol}} \right)$$

$$n_{\text{molec}} = 2,31 \times 10^{25} \text{ moleculas}$$

$$c) n_{\text{molec}} = (100,0 \text{ L}) \times \left(\frac{0,0037 \text{ g}}{1 \text{ cm}^3} \right) \times \left(\frac{10^3 \text{ cm}^3}{1 \text{ L}} \right) \times \left(\frac{1 \text{ mol}}{70,91 \text{ g}} \right) \times \left(\frac{6,022 \times 10^{23} \text{ moleculas}}{1 \text{ mol}} \right)$$

$$n_{\text{molec}} = 2,9 \times 10^{21} \text{ moleculas}$$

$$10) a) C_s = 132,9054 \mu$$

$$Cl = 35,45 \mu$$

$$MM(C_2Cl) = 132,9054 \mu + 35,45 \mu = 168,36 \mu$$

$$m(C_2Cl) = 168,36 \mu \times \left(\frac{1 \text{ g/mol}}{1 \mu} \right) = 168,36 \text{ g/mol}$$

$$b) C: 12,011 \mu$$

$$H: 1,008 \mu$$

$$mm(CH_4) = 12,011 \mu + 4 \times (1,008 \mu) = 16,043 \mu$$

$$m(CH_4) = 16,043 \mu \times \left(\frac{1 \text{ g/mol}}{1 \mu} \right) = 16,043 \mu$$

$$c) Ca: 40,078 \mu$$

$$C: 12,011 \mu$$

$$O: 15,999 \mu$$

$$mm(CaCO_3) = 40,078 \mu + 12,011 \mu + 3 \times (15,999 \mu) = 100,086 \mu$$

$$m(CaCO_3) = 100,086 \mu \times \left(\frac{1 \text{ g/mol}}{1 \mu} \right) = 100,086 \text{ g/mol}$$

$$d) N = 14,007 \mu$$

$$mm(C_8H_{10}N_4O_2) = 8 \times (12,011) + (10 \times 1,008) + 4 \times (14,007) + 2 \times (15,999)$$

$$m(C_8H_{10}N_4O_2) = 194,194 \mu \times \left(\frac{1 \text{ g/mol}}{1 \mu} \right) = 194,194 \text{ g/mol}$$