Answer on Question #53042 – Chemistry– General Chemistry

Question:

a) Calculate the number of mole of O_2 in 100l of this gas;

note: Vm=22.4 mol/l

b) Calculate the number of mole 22.1g of calcium oxide

Answer:

The ideal gas equation can be rearranged to give an expression for the molar volume of an ideal gas:

$$n = \frac{V}{V_m} = \frac{m}{M}$$

where V is the volume of the gas (l), V_m is the molar volume of the gas (22.4 l/mol), n is the amount of substance (mol), m is the mass of substance (g) and M is the molar mass of substance (g/mol)

a) Then

$$n(O_2) = \frac{100}{22.4} = 4.46 \approx \mathbf{4.5\ mol}$$

b) Then

$$n(CaO) = \frac{22.1}{56} = 0.39 \approx \mathbf{0.4\ mol}$$