S3 Chemistry Quiz
Basic Chemical Calculation 2

(a) Calculate the number of molecules in 6.4 g of methane (CH_4).

(b) Calculate the number of moles of atoms in 3×10^{24} atoms of copper.

(c) Calculate the total number of moles of atoms in 30 g of glucose ($C_6H_{12}O_6$).

(d) In 2.84 g of sodium sulphate (Na_2SO_4), calculate the number of moles of (i) Na_2SO_4 and (ii) ions

[R.A.M: H = 1; C = 12; O = 16; Na = 23; S = 32; Cu = 63.5

Avogadro's Number = 6×10^{23}]

(a)   Molar mass of CH_4 = 12 + 4 x 1 = 16   1
      No. of mole of CH_4 = 6.4 / 16   1
                          = 0.4
      No. of molecules   = 0.4 x 6 x 10^{23} = 2.4 x 10^{23} 1

(b)   No. of moles of atoms = 3 × 10^{24} / 6 x 10^{23} 1
                          = 0.5   1

(c)   Molar mass of $C_6H_{12}O_6$ = 180   1
      No. of mole of $C_6H_{12}O_6$ = 30 / 180   1
                          = 1 / 6
      No. of atoms = (1 / 6) x 24   1
                  = 4   1

(d)   Molar mass of Na_2SO_4 = 23 x 2 + 32 + 16 x 4 = 142   1
      No. of mole of Na_2SO_4 = 2.84 / 142 = 0.02   1
      No. of mole of ions = 0.02 x 3   1
                      = 0.06   1