Chem11 Stoichiometry : W.S. - 20

1) Fill in the blanks for the reaction :

$4Fe + 3O_2 \rightarrow 2Fe_2O_3$

a) _____ atoms of Fe + _____ molecules of O_2 yields __2__ formula units of Fe_2O_3.

b) _____ moles Fe + __3.0__ moles O_2 yields _____ moles Fe_2O_3. (This is the moles equation)

c) __1.0__ moles Fe + _____ moles O_2 yields _____ moles Fe_2O_3.

d) _____ moles Fe + __9.0__ moles O_2 yields _____ moles Fe_2O_3.

e) _____ moles Fe + _____ moles O_2 yields __7.3__ moles Fe_2O_3.

f) _____ moles Fe + 4.1×10^3 moles O_2 yields _____ moles Fe_2O_3.

g) 8.2×10^{-7} moles Fe + _____ moles O_2 yields _____ moles Fe_2O_3.

2) Fill in the blanks using the reaction in question 1). Calculate the masses in 2a) to one decimal place.

$4Fe + 3O_2 \rightarrow 2Fe_2O_3$

a) _____ grams Fe + __96.0__ grams O_2 yields _____ grams Fe_2O_3. (This is the mass equation)

b) _____ grams Fe + __24.0__ grams O_2 yields _____ grams Fe_2O_3.

c) __446.8__ grams Fe + _____ grams O_2 yields _____ grams Fe_2O_3.

d) _____ grams Fe + _____ grams O_2 yields __67.0__ grams Fe_2O_3.

e) _____ grams Fe + 8.7×10^{-3} grams O_2 yields _____ grams Fe_2O_3.

3)a) Balance the reaction : ____ P_4 + ____ Cl_2 -> ____ PCl_5

b) 85 moles of phosphorus (P_4) will produce _____ grams of PCl_5 if reacted with excess chlorine.

c) 0.00043 grams of chlorine gas requires at least _____ moles of phosphorus (P_4) to react.

Answers : 1)a) 4, 3, b) 4.0, 2.0, c) 0.75, 0.50, d) 12, 6.0, e) 15, 11, f) $5.5x10^3$, $2.7x10^3$, g) $6.2x10^{-7}$, $4.1x10^{-7}$, 2)a) 223.4, 319.4, b) 55.9, 79.9, c) 192.0, 638.8, d) 46.9, 20.1, e) $2.0x10^{-2}$, $2.9x10^{-2}$, 3)a) 1, 10, 4, b) $7.1x10^4$, c) $6.1x10^{-7}$.