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Prova 1

1)

a) $C = w \cdot d \cdot 1000$

$C = 0,98 \cdot 0,01 \cdot 1000$

$C = 9,8\ g/L$

$D = \frac{3,6734}{250} = 0,01$

b) $M = \frac{w \cdot d \cdot 1000}{MM} = \frac{0,98 \cdot 0,01 \cdot 1000}{90} = 0,10\ mol/L$

$C_1 \times V_1 = C_2 \times V_2$

$0,10 \times 250 = C_2 \times 100$

$25 = C_2 100$

$C_2 = 4\ mol$

2) a)

$1,84\ g$ — $1\ ml$

x — $1200\ ml$

$x = 2.208\ g$ de solução

$95\ g$ — $100\ g$

x — $2.208\ g$

$x = 2.097,6\ g$ de H_2SO_4

b) $M = \frac{w \cdot d \cdot 1000}{MM}$

$MM = H_2SO_4 = 98,1$

$M = \frac{0,95 \cdot 1,84 \cdot 1000}{98,1} = 17,81\ mol/L$

c) $25,0\ g$ — $1000\ ml$

x — $250\ ml$

$x = 6,25\ g$

$1\ mol\ H_2SO_4$ — $98,1\ g$

x — $6,25\ g$

$x = 0,063\ mol$

$C_1 \times V_1 = C_2 \times V_2$

$21,37 \times 1200 = 0,063 \times V_2$

$25.64 = 0,063$

$17,81\ mol$ — $1000\ ml$

x — $1200\ ml$

$x = 21,37\ mol$

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3)

a)

1= $3CH_2O + 2Cr_2O_7^{-2} + 16H^+ \rightarrow 3CO_2 + 11H_2O + 4Cr^{+3}$

2= $6Fe^{2+} + Cr_2O_7^{-2} + 14H^+ \rightarrow 2Cr^{3+} + 6Fe^{+3} + 7H_2O$

b) 1 mol de CO_2 — 22,4L

x — 134,4L

x = 6 mols

MM = CH_2O = 30

$3CH_2O$ — $3CO_2$

6 mol CH_2O — 6 mol CO_2

1 mol CH_2O — 30g

6 mol CH_2O — x

x = 180g CH_2O

4)

a) $4C_8H_{18} + 50O_2 \rightarrow 32CO_2 + 36H_2O$

b) MM = O_2 = 32

1 mol O_2 — 32g

50 mol O_2 — x

x 1.600g de O_2

c) 32 x 44 = 1.408

114 x 4 = 456

456 — 1.408 x 342g

x — 1,056

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5) a) $3\,CaSO_4 \cdot 2H_2O + Al^{+3} \rightarrow Al_2(SO_4)_3 + 2H_2O + 3Ca^{+2}$

b) $3\,CaSO_4\,2H_2O$ —— $1\,Al^{+3}$

$3 \times 172\,g$ —— $27\,g$

$516\,g$ —— $27\,Al$

x —— $80\,Al$

$x = 1.528,88\,g\ CaSO_4.2H_2O$

↳ Agente limitante

$516\,g$ — $27\,Al$ $\quad x = 52,32\,Al_g$ - EXCESSO

$1000\,g$ — x