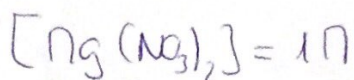
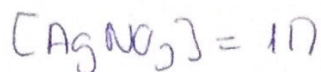
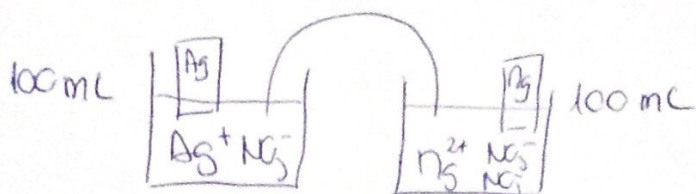


EJERCICIOS EQUILIBRIOS BLOQUE III

REDOX

1) 290 K

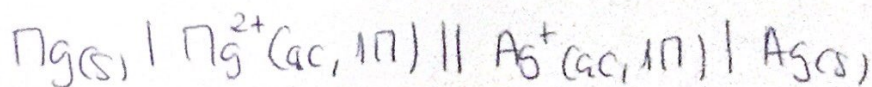
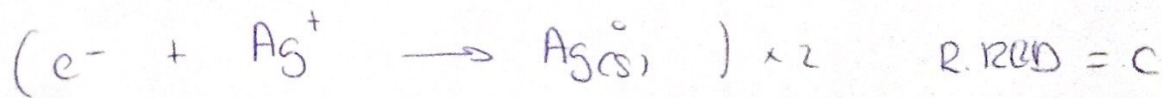


$$E^{\circ}_{celda} = 3,556 V$$

in vac
(c.n)

Sol: sabemos que se forma $Ag(s)$

a)



b) E°_{Ni} ?

$$E^{\circ}_{celda} = E^{\circ}_C - E^{\circ}_A$$

$$3,556 V = 0,80 - E^{\circ}_A$$

$$E^{\circ}_A = E^{\circ}_{Ni} = -2,316 V$$

c) DESPUÉS DE UN t : $9,711\text{ g AgCl}$

$$[\text{Ag}^+]? \quad [\text{Hg}^{2+}] = ?$$



$9,711\text{ g Ag} \rightarrow \text{mols?}$

$$9,711\text{ g} / 207,9\text{ g/mol} = 0,09\text{ mols de AgCl}$$

$$[\text{Ag}^+]_i = \Delta n = \frac{1\text{ mol}}{L} \xrightarrow{V=100\text{ mL}} \text{mols}_i = 0,1\text{ mol}$$

$$[\text{Hg}^{2+}]_i = \Delta n = \frac{1\text{ mol}}{L} \xrightarrow{V=200\text{ mL}} \text{mols}_i = 0,1\text{ mol}$$

$$[\text{Ag}^+]_f = \frac{(0,1\text{ mol} - 0,09\text{ mols})}{0,1\text{ L}} = 0,1\text{ M}$$

$$[\text{Hg}^{2+}]_f = \frac{(0,1\text{ mol} + \frac{0,09}{2}\text{ mols})}{0,1\text{ L}} = 1,45\text{ M}$$

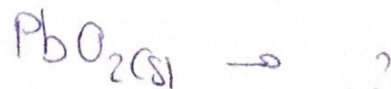
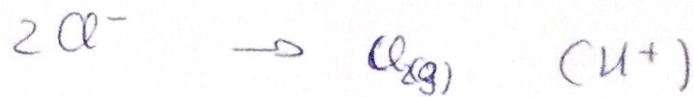
d) Potde c t ?

$$E = E^{\circ}_{\text{red}} - \frac{0,059}{n} \log \frac{[A^{2+}]_f}{[A^+]_c}$$

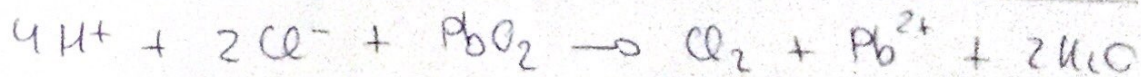
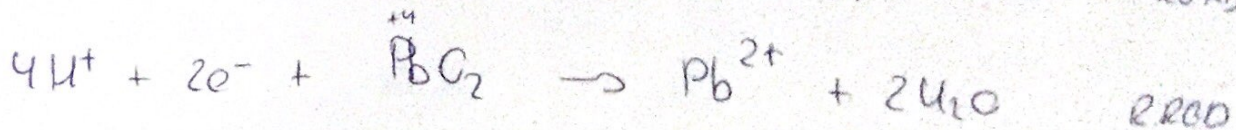
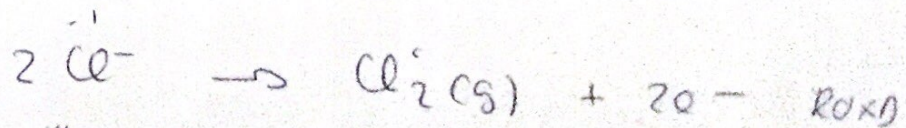
$$E = +3,156 \text{ V} - \frac{0,059}{2} \log (1,45/0,01)$$

$$E = +3,1217 \text{ V}$$

2)



a)



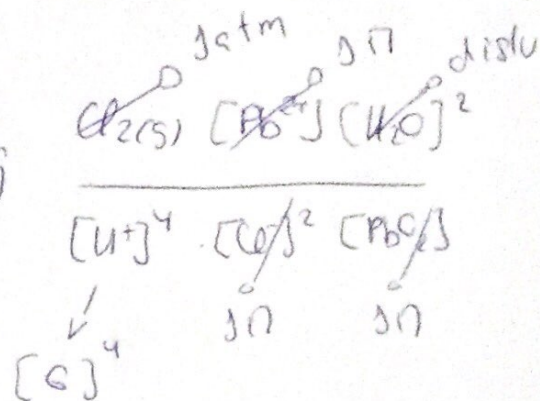
$$E^{\circ}_{\text{red}} = E^{\circ}_C - E^{\circ}_A$$

$$E^{\circ}_{\text{red}} = 1,455 \text{ V} - 1,372 \text{ V} = 0,092 \text{ V}$$

ESP

b) 4 si $[U^+] = 6 \text{ n}$

$$E = 0,097 - \frac{0,059}{2} \log$$



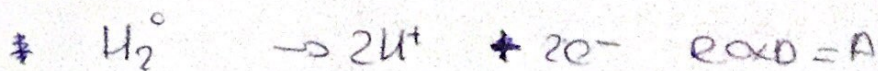
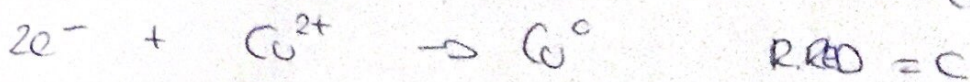
$$E = \underline{0,119 \text{ V}} \approx \underline{0,12 \text{ V}} \text{ BSP}$$

c) $pH = 4 \rightarrow [U^+] = 10^{-4} \text{ n}$

$$E = 0,207 \text{ V} \text{ BSP}$$

3) $H^+ / H_2(g) \quad Co^{2+} / Co$

a) PARA BSP $\rightarrow E_{H_2}^0 = 0 \text{ V} \quad \text{e} \quad E_{Co}^0 = 0,34 \text{ V}$



$$E_{\text{cel}}^0 = 0,34 \text{ V} - 0 \text{ V} = \underline{0,34 \text{ V}} \text{ BSP}$$

c) pH ?

$$E = 0,723 \text{ V}$$

298K

$$[Ce^{2+}] = 50$$

$$E = E^{\circ} - \frac{0,059}{n} \log \frac{[Ce^{2+}]^5}{[Ce^{4+}]^2}$$

$$E = 0,34 \text{ V} - 0,0295 \log [H^+]^2$$

$$E = 0,34 \text{ V} - 0,0295 \cdot 2 \log [H^+] \quad \leftarrow - \frac{0,059}{2} \cdot 2$$

$$E = 0,723 = 0,34 - 0,059 \log [H^+]$$

$$\text{pH} = \underline{6,49}$$