



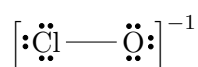
QUÍMICA
OPCIÓN A - SOLUCIONES

1. a) No; b) A; c) B; d) C y D.

2.

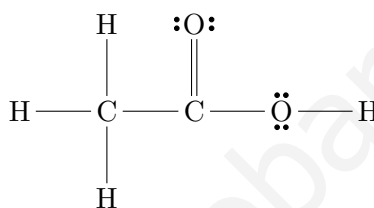
a)

$$14 e^- \equiv 7 \text{ pares}$$



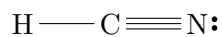
b)

$$24 e^- \equiv 12 \text{ pares}$$



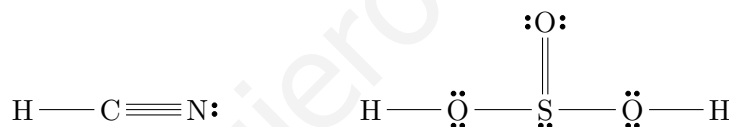
c)

$$10 e^- \equiv 5 \text{ pares}$$



d)

$$26 e^- \equiv 13 \text{ pares}$$



3.

	CO ₂ (g)	+	H ₂ (g)	⇌	CO(g)	+	H ₂ O(g)
$n(\xi = 0 \text{ mol})/\text{mol}$	2,00		2,00		0		0
$n(\xi = \xi_{\text{eq}})/\text{mol}$	$2,00 - z$		$2,00 - z$		z		z

$$z = 0,540 \text{ mol}$$

	CO ₂ (g)	+	H ₂ (g)	⇌	CO(g)	+	H ₂ O(g)
$n(\xi = \xi_{\text{eq}})/\text{mol}$	1,46		1,46		0,540		0,540

$$n_{\text{tot, eq}} = 1,46 + 1,46 + 0,540 + 0,540 = 4,00 \text{ mol}$$



	$x_{\text{eq}} = n_{\text{eq}}/n_{\text{tot, eq}}$	$p_{\text{eq}}/\text{atm} = x_{\text{eq}} \cdot p_{\text{tot, eq}}/\text{atm} = x_{\text{eq}} \cdot 1,00$
CO ₂ (g)	$\frac{1,46}{4,00} = 0,365$	0,365
H ₂ (g)	$\frac{1,46}{4,00} = 0,365$	0,365
CO(g)	$\frac{0,540}{4,00} = 0,135$	0,135
H ₂ O(g)	$\frac{0,540}{4,00} = 0,135$	0,135

$$K_p = \frac{\frac{p_{\text{CO(g), eq}}}{p^\ominus} \cdot \frac{p_{\text{H}_2\text{O(g), eq}}}{p^\ominus}}{\frac{p_{\text{CO}_2\text{(g), eq}}}{p^\ominus} \cdot \frac{p_{\text{H}_2\text{(g), eq}}}{p^\ominus}} = \frac{0,135 \cdot 0,135}{0,365 \cdot 0,365} = 0,137$$

Procedimiento alternativo:

$$n_{\text{tot, eq}} = 4,00 \text{ mol}$$

$$V = \frac{nRT}{p} = \frac{4,00 \times 0,0821 \times (550 + 273,15)}{1,00} = 270,32 \text{ L}$$

	CO ₂ (g)	+	H ₂ (g)	⇌	CO(g)	+	H ₂ O(g)
$n(\xi = \xi_{\text{eq}})/\text{mol}$	1,46		1,46		0,540		0,540
$c(\xi = \xi_{\text{eq}})/(\text{mol L}^{-1})$	$\frac{1,46}{270,32}$		$\frac{1,46}{270,32}$		$\frac{0,540}{270,32}$		$\frac{0,540}{270,32}$

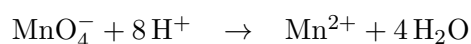
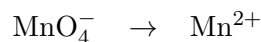
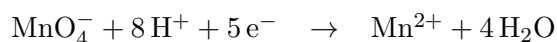
$$K_c = \frac{\frac{[\text{CO(g)}]}{c^\ominus} \cdot \frac{[\text{H}_2\text{O(g)}]}{c^\ominus}}{\frac{[\text{CO}_2\text{(g)}]}{c^\ominus} \cdot \frac{[\text{H}_2\text{(g)}]}{c^\ominus}} = \frac{[\text{CO(g)}] \cdot [\text{H}_2\text{O(g)}]}{[\text{CO}_2\text{(g)}] \cdot [\text{H}_2\text{(g)}]} = \frac{\frac{0,540}{270,32} \cdot \frac{0,540}{270,32}}{\frac{1,46}{270,32} \cdot \frac{1,46}{270,32}} = 0,137$$

$$K_p = K_c(RT)^{\Delta n} = 0,137 (RT)^0 = 0,137$$

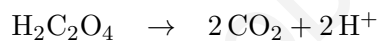
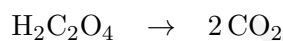
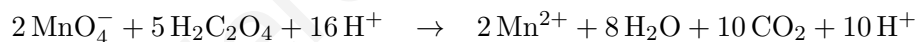
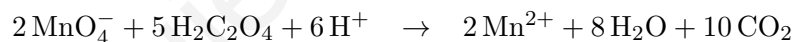
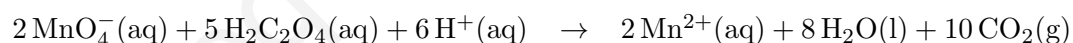


4.

Reducción

Manganeso(VII) \rightarrow Manganeso(II)**R**

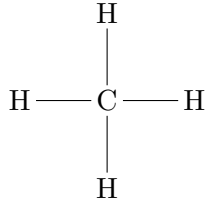
Oxidación

Carbono(III) \rightarrow Carbono(IV)**O****2R****5O****2R+5O****(2R+5O)'****(2R+5O)''**

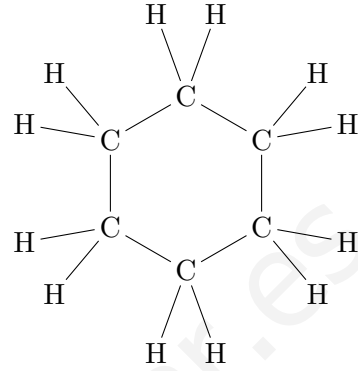


5.

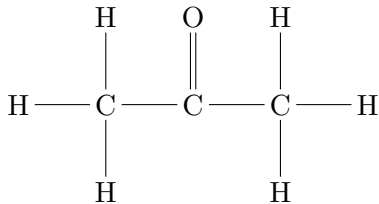
a) CH_4



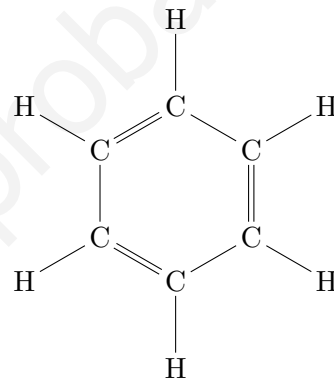
b) C_6H_{12}



c) $\text{C}_3\text{H}_6\text{O}$



d) C_6H_6



www.yoquieroaprobar.es

