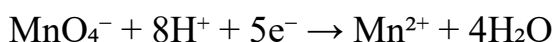


NAMUNAVIY MASALALAR

1-masala. Yarim reaksiya usuli (kislotali muhit)

$\text{Fe}^{2+} + \text{MnO}_4^- \rightarrow \text{Fe}^{3+} + \text{Mn}^{2+}$ reaksiyasini kislotali muhitda tenglashtiring.

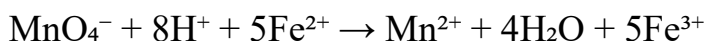
Yechim:



Elektronlarni tenglashtiramiz (Fe reaksiyasini 5 ga ko'paytiramiz):



Yig'amiz:



2-masala. Yarim reaksiya usuli (ishqoriy muhit)

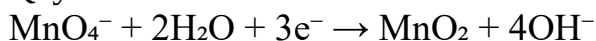
$\text{Cl}^- + \text{MnO}_4^- \rightarrow \text{Cl}_2 + \text{MnO}_2$ reaksiyasini ishqoriy muhitda tenglashtiring.

Yechim:

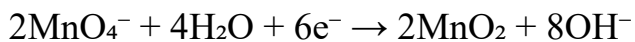
Oksidlanish:



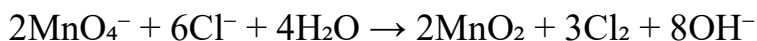
Qaytarilish:



Elektronlarni tenglashtiramiz (Cl reaksiyasini 3 ga, Mn reaksiyasini 2 ga):



Yig'amiz:



3-masala. Muhitni aniqlash

$\text{MnO}_4^- \rightarrow \text{MnO}_2$ o'zgarishi qaysi muhitda sodir bo'ladi?

Yechim:

Mn: $+7 \rightarrow +4$ (3e^- qabul qiladi).

Bu o'zgarish neytral yoki ishqoriy muhitda sodir bo'ladi.

4-masala. Oksidlovchi va qaytaruvchini aniqlash

$\text{Zn} + \text{Cu}^{2+} \rightarrow \text{Zn}^{2+} + \text{Cu}$ reaksiyasida oksidlovchi va qaytaruvchini toping.

Yechim:

$\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}^-$ (oksidlanish) $\rightarrow$ qaytaruvchi

$\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu}$ (qaytarilish) $\rightarrow$ oksidlovchi

5-masala. Elektronlar sonini aniqlash

$\text{Cr}_2\text{O}_7^{2-} \rightarrow 2\text{Cr}^{3+}$ o'zgarishida nechta elektron almashinadi?

Yechim:

Cr: $+6 \rightarrow +3 \rightarrow 3\text{e}^-$ qabul qiladi.

2 ta Cr bor $\rightarrow 2 \cdot 3 = 6\text{e}^-$

6-masala. Ekvivalent og'irlilik

$\text{Fe}^{2+} \rightarrow \text{Fe}^{3+}$ o'zgarishida Fe ning ekvivalent og'irligini toping.

($M(\text{Fe}) = 56 \text{ g} \cdot \text{mol}^{-1}$)

Yechim:

$\text{Fe}^{2+} \rightarrow \text{Fe}^{3+} + \text{e}^- \rightarrow z = 1$

$E = M / z = 56 / 1 = 56 \text{ g}$

7-masala. Ekvivalent usuli (hisoblash)

5.6 g Fe to'liq Fe^{3+} ga o'tsa, qancha elektron almashadi (mol hisobida)?

Yechim:

$n(\text{Fe}) = 5.6 / 56 = 0.10 \text{ mol}$

$\text{Fe} \rightarrow \text{Fe}^{3+} + 3\text{e}^-$

$n(\text{e}^-) = 0.10 \cdot 3 = 0.30 \text{ mol e}^-$

8-masala. Oksidlanish darajasi

NO_3^- ionida azotning oksidlanish darajasini aniqlang.

Yechim:

O = -2, jami -6

Ion zaryadi -1

$x - 6 = -1 \rightarrow x = +5$

9-masala. Qaytaruvchi kuchini taqqoslash

Quyidagi ionlardan qaysi biri kuchliroq qaytaruvchi: Fe^{2+} yoki Sn^{2+} ?
($\text{Fe}^{2+} \rightarrow \text{Fe}^{3+} : 1\text{e}^-$, $\text{Sn}^{2+} \rightarrow \text{Sn}^{4+} : 2\text{e}^-$)

Yechim:

Sn^{2+} ko'proq elektron beradi $\rightarrow$ kuchliroq qaytaruvchi.

10-masala. Redoks va ekvivalent bog'lanishi

Shart:

KMnO_4 kislotali muhitda oksidlovchi sifatida ishlatiladi.

KMnO_4 ning ekvivalent soni nechaga teng?

Yechim:

Mn: $+7 \rightarrow +2$

$z = 5$

Demak, KMnO_4 ning ekvivalent soni 5 ga teng.