

KEY

QUIZ # 6 CH # 17

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Date:

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Q.1 Write down the half reaction of the following cell reactions (both anodic and cathodic).



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Q.2. Give standard line notation for each cell reactions.



3

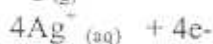


Q.3. To calculate the standard free-energy change, ΔG° and standard potential E° for the following reaction. Give overall balance equation. Is this spontaneous or not.

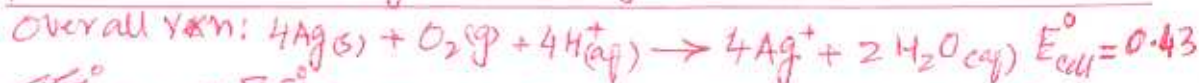
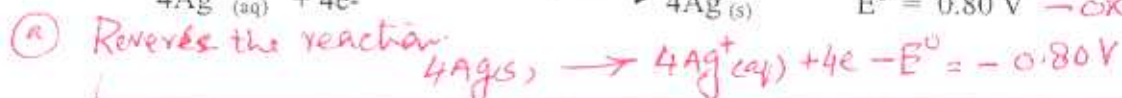


$F = 96500 \text{ J/V.mol}$

$E^{\circ} = 1.23 \text{ V} - \text{Reduction}$



$E^{\circ} = 0.80 \text{ V} - \text{oxidation}$

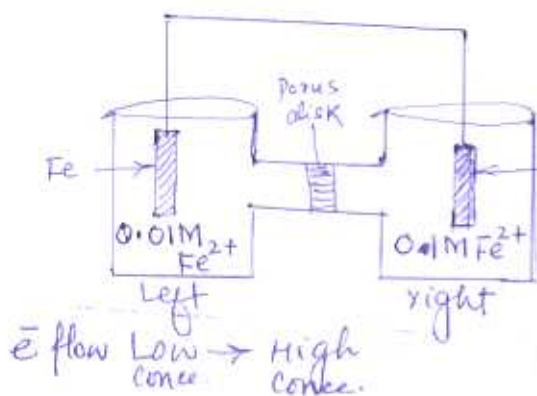


(b) $\Delta G^{\circ} = -nFE^{\circ}_{cell} = -4 \times [96,500 \text{ J/V.mol}] [0.43] \text{ V}$
 $= -1.7 \times 10^5 \text{ J/mol} = \boxed{-170 \text{ kJ/mol}}$

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(c) spontaneous $\rightarrow E^{\circ} = +ve, \Delta G^{\circ} = -ve.$

Q.4. Predict the direction of electron flow and designate anode and cathode compartment if the Fe^{2+} concentration in right compartment change from 0.1 M to $1 \times 10^{-7} \text{ M } Fe^{2+}$.



The direction of electron flow depend on concentration of Fe^{2+} in right compartment.

The electron always flow Low conc. to higher one (Anode to cathode)

If conc in compartment (right) change to $1 \times 10^{-7} \text{ M } Fe^{2+}$. Very low conc. So e^{-} flow from right to left here, right is Anode and left is Cathode.