Yakeen NEET 2.0 2026

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Electrochemistry

DPP: 3

Q1 The standard electrode potential of zinc ions is 0.76 V. What will be the potential of a $2\mathrm{M}$ solution at $300\ \mathrm{K}$?
(A) $0.83\ \mathrm{V}$
(B) $0.76\ \mathrm{V}$
(C) $0.23\ \mathrm{V}$
(D) $0.98\ \mathrm{V}$

Q2 The EMF of H-electrode if pH of electrolyte is 2 is $[\mathrm{P}=1\ \mathrm{atm}]$
(A) $\frac{\mathrm{RT}}{\mathrm{F}}$
(B) $\frac{\mathrm{RT}}{2\,\mathrm{F}}$
(C) $\frac{2.303\mathrm{RT}}{\mathrm{F}}$
(D) $-0.118\ \mathrm{V}$

Q3 The Nernst equation giving dependence of electrode oxidation potential on concentration is
(A) $\mathrm{E}=\mathrm{E}^{\mathrm{o}}+\frac{2.303\mathrm{RT}}{\mathrm{nF}}\log\left[\mathrm{M}^{+\mathrm{n}}\right]$
(B) $\mathrm{E}=\mathrm{E}^{\mathrm{o}}-\frac{2.303\mathrm{RT}}{\mathrm{nF}}\log\frac{[\mathrm{M}^{\mathrm{n}+}]}{[\mathrm{M}]}$
(C) $\mathrm{E}=\mathrm{E}^{\mathrm{o}}-\frac{2.303\mathrm{RT}}{\mathrm{nF}}\log\left[\mathrm{M}^{\mathrm{n}+}\right]$
(D) $\mathrm{E}=\mathrm{E}^{\mathrm{o}}+\frac{2.303\mathrm{RT}}{\mathrm{nF}}\log\frac{[\mathrm{M}]}{[\mathrm{M}^{\mathrm{n}+}]}$

Q4 The relationship between standard reduction potential of a cell and equilibrium constant is shown by
(A) $\mathrm{E}^{\mathrm{o}}_{\text{cell}}=\frac{\mathrm{n}}{0.059}\log\mathrm{K}_{\mathrm{C}}$
(B) $\mathrm{E}^{\mathrm{o}}_{\text{cell}}=\frac{0.059}{\mathrm{n}}\log\mathrm{K}_{\mathrm{C}}$
(C) $\mathrm{E}^{\mathrm{o}}_{\text{cell}}=0.059\mathrm{n}\log\mathrm{K}_{\mathrm{C}}$
(D) $\mathrm{E}^{\mathrm{o}}_{\text{cell}}=\frac{\log\mathrm{K}_{\mathrm{C}}}{\mathrm{n}}$

Q5 Which is the correct representation for the Nernst equation?
(A) $\mathrm{E}_{\mathrm{RP}}=\mathrm{E}^{\mathrm{o}}_{\mathrm{RP}}+\frac{0.059}{\mathrm{n}}\log\frac{[\text{oxidant}]}{[\text{product}]}$
(B) $\mathrm{E}_{\mathrm{OP}}=\mathrm{E}^{\mathrm{O}}_{\mathrm{OP}}-\frac{0.059}{\mathrm{n}}\log\frac{[\text{oxidant}]}{[\text{reductant}]}$
(C) $\mathrm{E}_{\mathrm{OP}}=\mathrm{E}^{\mathrm{O}}_{\mathrm{OP}}+\frac{0.059}{\mathrm{n}}\log\frac{[\text{reductant}]}{[\text{oxidant}]}$
(D) All of these

Q6 For the cell $\mathrm{Tl}\left|\mathrm{Tl}^{+1}(0.001\mathrm{M})\right|\left|\mathrm{Cu}^{+2}(0.1\mathrm{M})\right|\mathrm{Cu}$, E_{cell} at $25^{\circ}\mathrm{C}$ is $0.83\ \mathrm{V}$. Which can be increased by
(A) increasing $\left[\mathrm{Cu}^{+2}\right]$
(B) increasing $\left[\mathrm{Tl}^{+}\right]$
(C) decreasing $\left[\mathrm{Cu}^{+2}\right]$
(D) None of these

Q7 How much will the potential of a hydrogen electrode change when its solution initially at $\mathrm{pH}=0$ is neutralized to $\mathrm{pH}=7$?
(A) increase by $0.059\ \mathrm{V}$
(B) decrease by $0.059\ \mathrm{V}$
(C) increase by $0.41\ \mathrm{V}$
(D) decrease by $0.41\ \mathrm{V}$

Q8 For a cell involving one electron, $\mathrm{E}^{\mathrm{o}}_{\text{cell}}=0.59\ \mathrm{V}$ at $298\ \mathrm{K}$, the equilibrium constant for the reaction is

$$\frac{2.303\mathrm{RT}}{\mathrm{F}}=0.059\ \mathrm{V}$$

(A) 10^{30}
(B) 10^{2}

(C) 10^5 (D) 10^{10}

Q9 Find the value of the emf of the cell in which the following reaction takes place :
$\mathrm{Ni(s)} + 2\mathrm{Ag}^{+}(0.002\mathrm{M}) \rightarrow \mathrm{Ni}^{2+}(0.160\mathrm{M}) + 2\mathrm{Ag(s)}$, given that $E^{\ominus}_{\text{(cell)}} = 1.05\ \mathrm{V}$

(A) 0.23 volt (B) 0.31 volt

(C) 0.51 volt (D) 0.91 volt

Q10 The cell in which the following reaction occurs :
$2\mathrm{Fe}^{3+}(\mathrm{aq}) + 2\bar{I}^{-}(\mathrm{aq}) \rightarrow 2\mathrm{Fe}^{2+}(\mathrm{aq})$ has $+\mathrm{I}_2(\mathrm{s})$
$E^{\circ}_{\text{(cell)}} = 0.236\ \mathrm{V}$ at $298\ \mathrm{K}$. Find the value of the standard Gibbs energy and the equilibrium constant of the cell reaction.

(A) $\Delta_r G^{\ominus} = -45.54\ \mathrm{kJ\ mol^{-1}}$, $\mathrm{K_c} = 9.62 \times 10^7$

(B) $\Delta_r G^{\ominus} = -55.54\ \mathrm{kJ\ mol^{-1}}$, $\mathrm{K_c} = 7.62 \times 10^7$

(C) $\Delta_r G^{\ominus} = -80.54\ \mathrm{kJ\ mol^{-1}}$, $\mathrm{K_c} = 3.62 \times 10^7$

(D) $\Delta_r G^{\ominus} = -10.54\ \mathrm{kJ\ mol^{-1}}$, $\mathrm{K_c} = 1.62 \times 10^7$

Answer Key

Q1	(B)
Q2	(D)
Q3	(C)
Q4	(B)
Q5	(D)
Q6	(A)
Q7	(D)
Q8	(D)
Q9	(D)
Q10	(A)