

Questions with Answer Keys

MathonGo

Q1: 24 Feb (Shift 1) - Single Correct

The electrode potential of M^{2+}/M of 3d-series elements shows positive value for:

- (1) Zn
- (2) Co
- (3) Fe
- (4) Cu

Q2: 24 Feb (Shift 2) - Numerical

The magnitude of the change in oxidising power of the MnO_4^-/Mn^{2+} couple is $x \times 10^{-4}$ V, if the H^+ concentration is decreased from 1M to 10^{-4} M at $25^\circ C$. (Assume concentration of MnO_4^- and Mn^{2+} to be same on change in H^+ concentration). The value of x is _____ (Rounded off to the nearest integer) [Given

$$: \frac{2303RT}{F} = 0.059]$$

Q3: 25 Feb (Shift 2) - Numerical

Copper reduces NO_3^- into NO and NO_2 depending upon the concentration of HNO_3 in solution.

(Assuming fixed $[Cu^{2+}]$ and $P_{NO} = P_{NO_2}$), the HNO_3 concentration at which the thermodynamic tendency for reduction of NO_3^- into NO and NO_2 by copper is same is 10^x M. The value of 2x is _____ (Rounded-off to

the nearest integer)

$$[Given : E_{Cu^{2+}/Cu}^0 = 0.34 \text{ V}, E_{NO_3^-/NO}^0 = 0.96 \text{ V}, E_{NO_3^-/NO_2}^0 = 0.79 \text{ V and at } 298 \text{ K}, \frac{RT}{F} (2.303) = 0.059]$$

Q4: 26 Feb (Shift 1) - Numerical

Consider the following reaction



The quantity of electricity required in Faraday to reduce five moles of MnO_4^- is

Q5: 26 Feb (Shift 2) - Numerical

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Emf of the following cell at 298 K in V is $x \times 10^{-2}$. $\text{Zn} | \text{Zn}^{2+} (0.1\text{M}) || \text{Ag}^+ (0.01\text{M}) | \text{Ag}$

The value of x is _____ (Rounded off to the nearest integer) [Given

$$: E_{\text{Zn}^{2+}/\text{Zn}}^0 = -0.76 \text{ V}; E_{\text{Ag}^+/\text{Ag}}^0 = +0.80 \text{ V}; \frac{2.303RT}{F} = 0.059]$$

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Answer Key

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Q1 (4)

Q2 (3776)

Q3 (1)

Q4 (25)

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Q5 (147)

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