

NEET ELECTROCHEMISTRY — ELECTROCHEMICAL CELLS, CONSTRUCTION OF GALVANIC CELL AND CALCULATION OF STANDARD EMF — PYQS

Max. Marks: 40

Questions: 10

Section A (MCQ) — 10 questions

- Q.1** The standard electrode potential (E°) for the half-cell reaction $\text{Fe}^{3+} + e^- \longrightarrow \text{Fe}^{2+}$ at 298 K is (Given : $E^\circ(\text{Fe}^{3+}/\text{Fe}) = -0.04$ V and $E^\circ(\text{Fe}^{2+}/\text{Fe}) = -0.44$ V at 298 K)

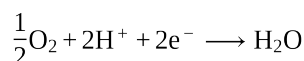
[RE-NEET (UG) 2026]

(1) +0.92 V (2) +0.40 V (3) +0.76 V (4) -0.48 V

Scan or tap for the full solution



- Q.2** Given below are half cell reactions:
 $\text{MnO}_4^- + 8\text{H}^+ + 5e^- \longrightarrow \text{Mn}^{2+} + 4\text{H}_2\text{O}$,
 $E^\circ_{\text{Mn}^{2+}/\text{MnO}_4^-} = -1.510$ V



$$E^\circ_{\text{O}_2/\text{H}_2\text{O}} = +1.223$$
 V

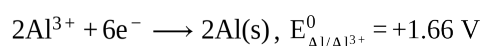
Will the permanganate ion, MnO_4^- liberate O_2 from water in the presence of an acid? [NEET (UG) 2022]

- (1) Yes, because $E^\circ_{\text{cell}} = +0.287$ V
 (2) No, because $E^\circ_{\text{cell}} = -0.287$ V
 (3) Yes, because $E^\circ_{\text{cell}} = +2.733$ V
 (4) No, because $E^\circ_{\text{cell}} = -2.733$ V

Scan or tap for the full solution



- Q.3** Two half cell reactions are given below.
 $\text{Co}^{3+} + e^- \longrightarrow \text{Co}^{2+}$, $E^\circ_{\text{Co}^{2+}/\text{Co}^{3+}} = -1.81$ V



The standard EMF of a cell with feasible redox reaction will be : [NEET (UG) 2022 (Phase 2)]

(1) -3.47 V (2) +7.09 V (3) +0.15 V (4) +3.47 V

Scan or tap for the full solution



- Q.4** A button cell used in watches functions as follows.
 $\text{Zn(s)} + \text{Ag}_2\text{O(s)} + \text{H}_2\text{O(l)} \rightleftharpoons 2\text{Ag(s)} + \text{Zn}^{2+}(\text{aq}) + 2\text{OH}^-(\text{aq})$
 If half cell potentials are
 $\text{Zn}^{2+}(\text{aq}) + 2e^- \longrightarrow \text{Zn(s)}; E^\circ = -0.76$ V
 $\text{Ag}_2\text{O(s)} + \text{H}_2\text{O(l)} + 2e^- \longrightarrow 2\text{Ag(s)} + 2\text{OH}^-(\text{aq}),$
 $E^\circ = 0.34$ V
 The cell potential will be [NEET 2013]

(1) 0.84 V (2) 1.34 V (3) 1.10 V (4) 0.42 V

Scan or tap for the full solution



- Q.5** Consider the half-cell reduction reaction
 $\text{Mn}^{2+} + 2e^- \longrightarrow \text{Mn}$, $E^\circ = -1.18$ V
 $\text{Mn}^{2+} \longrightarrow \text{Mn}^{3+} + e^-$, $E^\circ = -1.51$ V
 The E° for the reaction $3\text{Mn}^{2+} \longrightarrow \text{Mn} + 2\text{Mn}^{3+}$, and possibility of the forward reaction are respectively [NEET 2013 (Karnataka)]
- (1) -4.18 V and yes (2) +0.33 V and yes
 (3) +2.69 V and no (4) -2.69 V and no

Scan or tap for the full solution



- Q.6** Standard electrode potential for $\text{Sn}^{4+}/\text{Sn}^{2+}$ couple is +0.15 V and that for the Cr^{3+}/Cr couple is -0.74 V. These two couples in their standard state are connected to make a cell. The cell potential will be [AIPMT 2011 (Prelims)]
- (1) +1.19 V (2) +0.89 V (3) +0.18 V (4) +1.83 V

Scan or tap for the full solution



- Q.7** Consider the following relations for emf of an electrochemical cell
- EMF of cell = (Oxidation potential of anode) - (Reduction potential of cathode)
 - EMF of cell = (Oxidation potential of anode) + (Reduction potential of cathode)
 - EMF of cell = (Reduction potential of anode) + (Reduction potential of cathode)
 - EMF of cell = (Oxidation potential of anode) - (Oxidation potential of cathode)
- Which of the above relations are correct?

[AIPMT 2010 (Mains)]

- (1) (iii) and (i) (2) (i) and (ii)
 (3) (iii) and (iv) (4) (ii) and (iv)

Scan or tap for the full solution



- Q.8** A hypothetical electrochemical cell is shown below.
 $\text{A} | \text{A}^+(\text{xM}) || \text{B}^+(\text{yM}) | \text{B}$
 The emf measured is +0.20 V. The cell reaction is [AIPMT 2006]

- (1) $A + B^+ \longrightarrow A^+ + B$
 (2) $A^+ + B \longrightarrow A + B^+$
 (3) $A^+ + e^- \longrightarrow A$; $B^+ + e^- \longrightarrow B$
 (4) the cell reaction cannot be predicted.

Scan or tap for the
full solution



- Q.9** $E^\circ_{\text{Fe}^{2+}/\text{Fe}} = -0.441 \text{ V}$ and $E^\circ_{\text{Fe}^{3+}/\text{Fe}^{2+}} = 0.771 \text{ V}$, the standard EMF of the reaction $\text{Fe} + 2\text{Fe}^{3+} \longrightarrow 3\text{Fe}^{2+}$ will be [AIPMT 2006]
 (1) 0.111 V (2) 0.330 V (3) 1.653 V (4) 1.212 V

Scan or tap for the
full solution



- Q.10** For the disproportionation of copper $2\text{Cu}^+ \longrightarrow \text{Cu}^{2+} + \text{Cu}$, E° is (Given E° for Cu^{2+}/Cu is 0.34 V and E° for $\text{Cu}^{2+}/\text{Cu}^+$ is 0.15 V.) [AIPMT 2000]
 (1) 0.49 V (2) -0.19 V (3) 0.38 V (4) -0.38 V

Scan or tap for the
full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	
Ans.	3	1	4	3	4	2	4	1	4	3	