



TARGET : NEET (UG) 2024

Course : SARANSH (Youtube Live CRASH COURSE)

I-CHEMISTRY

DPP

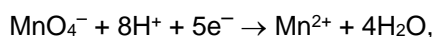
DAILY PRACTICE PROBLEMS

DPP NO. 1

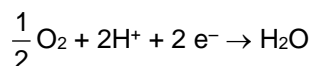
Physical Chemistry : ELECTROCHEMISTRY

DPP No. : 1

1. Given below are half-cell reactions:



$$E_{\text{Mn}^{2+}/\text{MnO}_4^-}^{\circ} = -1.510\text{V}$$

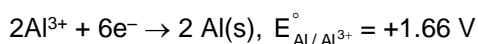
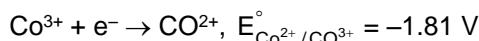


$$E_{\text{O}_2/\text{H}_2\text{O}}^{\circ} = +1.223\text{V}$$

Will the permanganate ion, MnO_4^- liberate O_2 from water in the presence of an acid ?

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

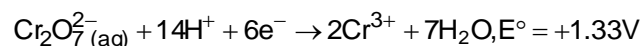
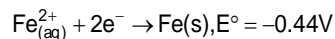
2. Two half cell reactions are given below :



The standard EMF of a cell with feasible redox reaction will be :

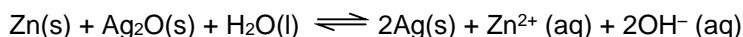
- (1) +7.09 V (2) +0.15 V (3) +3.47 V (4) -3.47 V

3. The correct value of cell potential in volt for the reaction that occurs when the following two half cells are connected, is

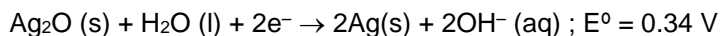
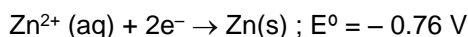


- (1) + 1.77 V (2) + 2.65 V
 (3) + 0.01 V (4) + 0.89 V

4. A button cell used in watches functions as following



If half cell potentials are :



The cell potential will be :

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

5. Standard reduction potentials of the half reactions are given below :



The strongest oxidising and reducing agents respectively are :

- (1) F_2 and I^- (2) Br_2 and Cl^- (3) Cl_2 and Br^- (4) Cl_2 and I_2

6. Zinc can be coated on iron to produce galvanized iron but the reverse is not possible. It is because

- (1) Zinc has higher negative electrode potential than iron
 (2) Zinc is lighter than iron
 (3) Zinc has lower melting point than iron
 (4) Zinc has lower negative electrode potential than iron

7. Consider the change in oxidation state of Bromine corresponding to different emf values as shown in the diagram below



Then the species undergoing disproportionation is

- (1) BrO_3^- (2) HBrO (3) Br_2 (4) BrO_4^-

8. Identify the reaction from following having top position in EMF series (Std. red. potential) according to their electrode potential at 298 K.

- (1) $\text{Mg}^{2+} + 2\text{e}^- \rightarrow \text{Mg(s)}$ (2) $\text{Fe}^{2+} + 2\text{e}^- \rightarrow \text{Fe(s)}$
 (3) $\text{Au}^{3+} + 3\text{e}^- \rightarrow \text{Au(s)}$ (4) $\text{K}^+ + 1\text{e}^- \rightarrow \text{K(s)}$

9. At 298 K, the standard electrode potentials of Cu^{2+}/Cu , Zn^{2+}/Zn , Fe^{2+}/Fe and Ag are 0.34 V, -0.76V , -0.44V and 0.80V , respectively.

On the basis of standard electrode potential, predict which of the following reaction can not occur?

- (1) $\text{FeSO}_4(\text{aq}) + \text{Zn}(\text{s}) \rightarrow \text{ZnSO}_4(\text{aq}) + \text{Fe}(\text{s})$ (2) $2\text{CuSO}_4(\text{aq}) + 2\text{Ag}(\text{s}) \rightarrow 2\text{Cu}(\text{s}) + \text{Ag}_2\text{SO}_4(\text{aq})$
 (3) $\text{CuSO}_4(\text{aq}) + \text{Zn}(\text{s}) \rightarrow \text{ZnSO}_4(\text{aq}) + \text{Cu}(\text{s})$ (4) $\text{CuSO}_4(\text{aq}) + \text{Fe}(\text{s}) \rightarrow \text{FeSO}_4(\text{aq}) + \text{Cu}(\text{s})$

10. The E° Values for

$\text{Al}^+ / \text{Al} = +0.55\text{V}$ and $\text{Tl}^+ / \text{Tl} = -0.34\text{V}$

$\text{Al}^{3+} / \text{Al} = -1.66\text{V}$ and $\text{Tl}^{3+} / \text{Tl} = +1.26\text{V}$

Identify the incorrect statement.

- (1) Al is more electropositive than Tl. (2) Tl^{3+} is a good reducing agent than Tl^+ .
 (3) Al^+ is unstable in solution. (4) Tl can be easily oxidised to Tl^+ than Tl^{3+} .

Answer Key

1. (3) 2. (3) 3. (1) 4. (4) 5. (1) 6. (1) 7. (2)
 8. (3) 9. (2) 10. (2)