

# PYQSide

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

Max. Marks: 40

Questions: 10

### Section A (MCQ)

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

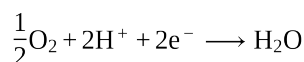
[RE-NEET (UG) 2026]

(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:  
 $\text{MnO}_4^- + 8\text{H}^+ + 5e^- \longrightarrow \text{Mn}^{2+} + 4\text{H}_2\text{O}$ ,  
 $E^\circ_{\text{Mn}^{2+}/\text{MnO}_4^-} = -1.510 \text{ V}$



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

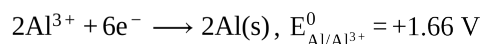
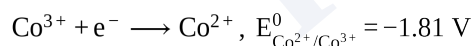
Will the permanganate ion,  $\text{MnO}_4^-$  liberate  $\text{O}_2$  from water in the presence of an acid? [NEET (UG) 2022]

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

Scan or tap for the full solution



- Q.3** Two half cell reactions are given below.



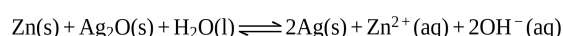
The standard EMF of a cell with feasible redox reaction will be : [NEET (UG) 2022 (Phase 2)]

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

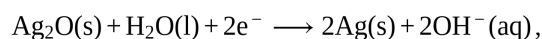
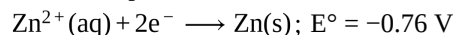
Scan or tap for the full solution



- Q.4** A button cell used in watches functions as follows.



If half cell potentials are



$$E^\circ = 0.34 \text{ V}$$

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  
 $\text{Mn}^{2+} + 2e^- \longrightarrow \text{Mn}$ ,  $E^\circ = -1.18 \text{ V}$   
 $\text{Mn}^{2+} \longrightarrow \text{Mn}^{3+} + e^-$ ,  $E^\circ = -1.51 \text{ V}$   
 The  $E^\circ$  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  $\text{Cr}^{3+}/\text{Cr}$  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

- (i) EMF of cell = (Oxidation potential of anode) - (Reduction potential of cathode)  
 (ii) EMF of cell = (Oxidation potential of anode) + (Reduction potential of cathode)  
 (iii) EMF of cell = (Reduction potential of anode) + (Reduction potential of cathode)  
 (iv) 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  $2\text{Cu}^+ \longrightarrow \text{Cu}^{2+} + \text{Cu}$ ,  $E^\circ$  is (Given  $E^\circ$  for  $\text{Cu}^{2+}/\text{Cu}$  is 0.34 V and  $E^\circ$  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  |  |