

## Electrochemistry

1. The charge required for the reduction of 1 mol of  $\text{MnO}_4^-$  to  $\text{MnO}_2$  is

- (a) 1 F
- (b) 3 F
- (c) 5 F
- (d) 6 F

▼ Answer

Answer: b

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2. The cell reaction of the galvanic cell.

**$\text{Cu(s)} / \text{Cu}^{2+}(\text{aq}) // \text{Hg}^{2+}(\text{aq}) / \text{Hg(l)}$  is**

- (a)  $\text{Hg} + \text{Cu}^{2+} \longrightarrow \text{Hg}^{2+} + \text{Cu}$
- (b)  $\text{Hg} + \text{Cu}^{2+} \longrightarrow \text{Cu}^+ + \text{Hg}^+$
- (c)  $\text{Cu} + \text{Hg} \longrightarrow \text{CuHg}$
- (d)  $\text{Cu} + \text{Hg}^{2+} \longrightarrow \text{Cu}^{2+} + \text{Hg}$

▼ Answer

Answer: d

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3. Which of the following reaction is used to make fuel cell?

- (a)  $\text{Cd(s)} + 2\text{Ni(OH)}_3(\text{s}) \longrightarrow \text{CuO(s)} + 2\text{Ni(OH)}_2(\text{s}) + \text{H}_2\text{O(l)}$
- (b)  $\text{Pb(s)} + \text{PbO}_2(\text{s}) + 2\text{H}_2\text{SO}_4(\text{aq}) \longrightarrow 2\text{PbSO}_4(\text{s}) + 2\text{H}_2\text{O(l)}$
- (c)  $2\text{H}_2(\text{g}) + \text{O}_2(\text{g}) \longrightarrow 2\text{H}_2\text{O(l)}$
- (d)  $2\text{Fe(s)} + \text{O}_2(\text{g}) + 4\text{H}^+(\text{aq}) \longrightarrow 2\text{Fe}^{2+}(\text{aq}) + 2\text{H}_2\text{O(l)}$

▼ Answer

Answer: c

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4. If limiting molar conductivity of  $\text{Ca}^{2+}$  and  $\text{Cl}^-$  are 119.0 and 76.3  $\text{S cm}^2 \text{mol}^{-1}$ , then the value of limiting molar conductivity of  $\text{CaCl}_2$  will be

- (a) 195.3  $\text{S cm}^2 \text{mol}^{-1}$
- (b) 271.6  $\text{S cm}^2 \text{mol}^{-1}$
- (c) 43.3  $\text{S cm}^2 \text{mol}^{-1}$
- (d) 314.3  $\text{S cm}^2 \text{mol}^{-1}$ .

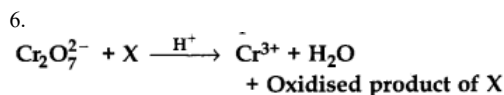
▼ Answer

Answer: b

5.  $\text{NH}_4\text{NO}_3$  is used in salt bridge because
- (a) it forms a jelly like material with agar-agar.
  - (b) it is a weak electrolyte.
  - (c) it is a good conductor of electricity.
  - (d) the transport number of  $\text{NH}_4^+$  and  $\text{NO}_3^-$  ions are almost equal.

▼ Answer

Answer: d



- (a)  $\text{Cr}_2\text{O}_7^{2-}$
- (b)  $\text{Fe}^{2+}$
- (c)  $\text{SO}_4^{2-}$
- (d)  $\text{S}^{2-}$

▼ Answer

Answer: b

7. The reaction,  $3\text{ClO}^- (\text{aq}) \rightarrow \text{ClO}_3^- (\text{aq}) + 2\text{Cl}^- (\text{aq})$  is an example of
- (a) Oxidation reaction
  - (b) Reduction reaction
  - (c) Disproportionation reaction
  - (d) Decomposition reaction

▼ Answer

Answer: c

8. The emf of the cell:  
 $\text{Ni} / \text{Ni}^{2+} (1.0 \text{ M}) // \text{Au}^{3+} (1.0 \text{ M}) / \text{Au}$  ( $E^\circ = -0.25 \text{ V}$  for  $\text{Ni}^{2+}/\text{Ni}$ ;  $E^\circ = 1.5 \text{ V}$  for  $\text{Au}^{3+}/\text{Au}$ ) is
- (a) 1.25 V
  - (b) -1.25 V
  - (c) 1.75 V
  - (d) 2.0 V

▼ Answer

Answer: c

9. The standard emf of a galvanic cell involving cell reaction with  $n = 2$  is found to be 0.295 V at 25° C. The equilibrium constant of the reaction would be
- (a)  $1.0 \times 10^{10}$
  - (b)  $2.0 \times 10^{11}$
  - (c)  $4.0 \times 10^{12}$
  - (d)  $1.0 \times 10^2$
- [Given  $F = 96500 (\text{mol}^{-1})$ ;  $R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$ ]

▼ Answer

Answer: a

10. If  $E^\circ_{\text{Fe}^{2+}/\text{Fe}} = -0.441 \text{ V}$  and  $E^\circ_{\text{Fe}^{2+}/\text{Fe}^{3+}} = 0.771 \text{ V}$ , the standard EMF of the reaction,  
 $\text{Fe} + 2\text{Fe}^{3+} \rightarrow 3\text{Fe}^{2+}$  will be
- (a) 1.212 V
  - (b) 0.111 V
  - (c) 0.330 V
  - (d) 1.653 V

▼ Answer

Answer: a