

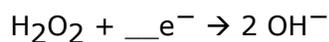
Spring 2009 CH 302: Practice Quiz 4

1. In which of the following polyatomic ions does the chromium atom have an even oxidation state?



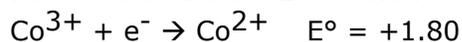
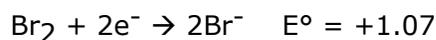
1. I only
2. II only
3. III only
4. I and II
5. I and III
6. II and III
7. I, II and III

2. How many electrons are required to balance the half reaction below?



1. 1
2. 2
3. 3
4. 4

3. Consider the half reactions below:



Which species is the weakest **oxidizing** agent?

1.  $\text{Zn}^{2+}$
2.  $\text{Br}^-$
3.  $\text{Fe}^{3+}$
4.  $\text{Co}^{2+}$

4. How many moles of metallic Tin (Sn) could be produced from  $\text{Sn}^{4+}$  at a current of 0.2 amperes for 964,853 seconds?

1. 20 moles Sn
2. 2 moles Sn
3. 5 moles Sn
4. 0.5 moles Sn

5. What is the standard cell potential of a battery made from the following two half reactions?



1. 2.46
2. -2.46
3. 0.86
4. -0.86

6. Iron can be produced by electrolysis of molten hematite ( $\text{Fe}_2\text{O}_3$ ). What species are produced at the cathode and anode respectively?

1.  $\text{O}_2(\text{g})$ ,  $\text{Fe}(\text{s})$
2.  $\text{Fe}^{3+}(\text{aq})$ ,  $\text{O}^{2-}(\text{aq})$
3.  $\text{Fe}(\text{l})$ ,  $\text{O}_2(\text{g})$
4.  $\text{Fe}(\text{s})$ ,  $\text{O}_2(\text{g})$
5.  $\text{O}^{2-}(\text{aq})$ ,  $\text{Fe}^{3+}(\text{aq})$

7. In electrochemical cells, the positive terminal is (always/sometimes/never) the cathode and is (always/sometimes/never) the site of reduction.
1. sometimes, never
  2. always, never
  3. always, always
  4. never, sometimes
  5. sometimes, sometimes
  6. sometimes, always
  7. never, never
8. The values of E and K are (linearly/exponentially) proportional and (directly/inversely) proportional.
1. linearly, inversely
  2. linearly, directly
  3. exponentially, inversely
  4. exponentially, directly