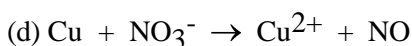
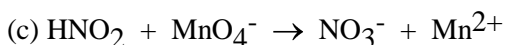
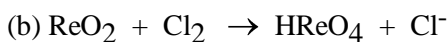
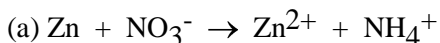


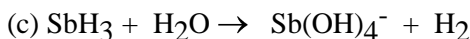
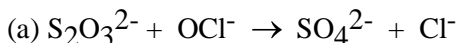
## PROBLEM SET No. 1 - OXIDATION REDUCTION REACTIONS & STOICHIOMETRY

1. Silberberg 4.64
2. Silberberg 4.67
3. Silberberg 4.74
4. Silberberg 4.75

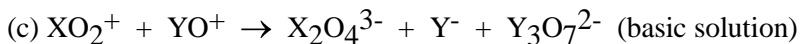
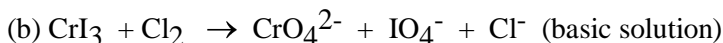
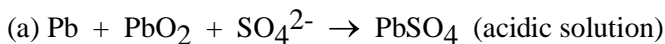
5. Balance the following oxidation-reduction equations. All reactions occur in acidic solutions.



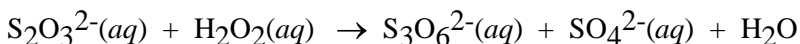
6. Balance the following oxidation-reduction equations. All reactions occur in basic solutions.



7. Balance the following oxidation-reduction equations under the specific conditions noted:



8. (a) Balance the following oxidation-reduction equation in **basic conditions**:



(b) Which substance is the oxidizing agent?

(c) What is the equivalent weight of  $\text{H}_2\text{O}_2$  (Molar mass = 34.0) in the above reaction?

(d) What is the normality of a 0.040 M  $\text{H}_2\text{O}_2$  solution used in the above reaction?

9. Iodine reacts with thiosulfate ion ( $\text{S}_2\text{O}_3^{2-}$ ) in acidic solution to form iodide and tetrathionate ion ( $\text{S}_4\text{O}_6^{2-}$ ). Calculate the volume in mL of 0.100 M  $\text{Na}_2\text{S}_2\text{O}_3$  needed to react with 7.50 g of  $\text{I}_2$ .

10. Silberberg 4.130 (**NOTE**: For part (c) of this question, the only solution which will be accepted is the one in which you use Normality, Molarity and equivalents. **DO NOT** balance any redox equation to solve this problem.