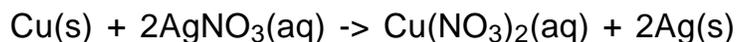
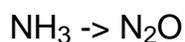


## O.R./Electrochemistry : Review-50

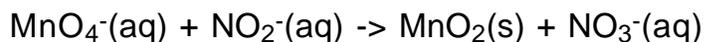
- 1) Define : oxidation -
- 2) Answer the following questions about the redox reaction :



- a) The species that is reduced is \_\_\_\_\_
  - b) The species that is oxidized is \_\_\_\_\_
  - c) The reducing agent is \_\_\_\_\_
- 3) Find the oxidation number for Cr in  $\text{Cr}_2\text{O}_7^{2-}$ . \_\_\_\_\_
  - 4) Balance the following half-reaction in a basic solution.



- 5) Balance the following redox reaction in a basic solution.



- 6) Will Mn spontaneously react with  $\text{Cs}^+$  ? (Yes or No).
- 7) Suppose that you have a silver-lead salt bridge electrochemical cell.
  - a) Give the redox reaction. \_\_\_\_\_
  - b) Find the voltage \_\_\_\_\_
  - c) Give the direction of negative ion flow \_\_\_\_\_
  - d) Which electrode decreases in mass ? \_\_\_\_\_
- 8) The hydrogen-oxygen fuel cell is an electrochemical cell used on the Space Shuttle. What three things does it produce ?

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9) A piece of zinc can be used to protect iron from corrosion. The two metals must be in contact.

a) What is this process called ? \_\_\_\_\_

b) Give the direction of electron flow. \_\_\_\_\_

10) A solution of  $\text{Fe}^{2+}$  of unknown concentration was titrated with a 0.125 M solution of  $\text{MnO}_4^-$  according to the reaction :



If 50.0 ml of acidified  $\text{Fe}^{2+}$  required 16.8 ml of the  $\text{MnO}_4^-$  solution then what was the concentration of the  $\text{Fe}^{2+}$  solution ? (Note : This is an oxidation-reduction reaction where there is a color change from purple  $\text{MnO}_4^-$  ions to colorless  $\text{Mn}^{2+}$  ions)

Answers : 1) It is the loss of electrons, 2)a)  $\text{Ag}^+$ , b) Cu, c) Cu, 3) +6, 4)  $2\text{NH}_3 + 8\text{OH}^- \rightarrow \text{N}_2\text{O} + 7\text{H}_2\text{O} + 8\text{e}^-$ , 5)  $2\text{MnO}_4^- + 3\text{NO}_2^- + \text{H}_2\text{O} \rightarrow 2\text{MnO}_2 + 3\text{NO}_3^- + 2\text{OH}^-$ , 6) No, 7)a)  $2\text{Ag}^+ + \text{Pb} \rightarrow 2\text{Ag} + \text{Pb}^{2+}$ , b) 0.93 V, c) towards the Pb half-cell, d) Pb, 8) electrical energy, heat, and water, 9) cathodic protection, from Zn to Fe, 10) 0.210 M.