Name:_____
Blk:_____Date:_____

Chemistry 12
Electrochemistry Lesson #13
ELECTROLYSIS

Electrolysis is _____
_____
_____

Electrolytic Cell or Electrolysis Cell _____
_____

IMPT!!! Electrolysis supplies energy to NON-SPONTANEOUS electrochemical reactions ($E^{o}_{CELL} < 0$), allowing them to occur.

A SIMPLE ELECTROLYTIC CELL: _____

Here is an illustration:

ONLY REACTANTS PRESENT ARE : **Na^+** and **Cl^-**
****THIS IS A NON-SPONTANEOUS REACTION****

$Cl_2 + 2e^- \text{<--- } 2\underline{Cl^-}$; $E^o =$ -1.36 V

$\underline{Na^+} + e^- \text{-----> } Na$; $E^o =$ -2.71 V

$2Na^+ + 2Cl^- \text{--> } 2Na + Cl_2$; $E^o_{CELL} = -4.07$ V

FOR HOMEWORK: Do Exercise 64.

ELECTROLYSIS OF AQUEOUS NaI
****THE ADDITION OF **WATER****

Here is an illustration:

IN THE ELECTROLYSIS OF AN AQUEOUS SOLUTION YOU MUST ALWAYS CONSIDER THE REDUCTION/OXIDATION OF WATER !!!!

Possible Reductions:

Possible Oxidations

WHEN SELECTING THE PREFERRED REACTION:
Select the rxn requiring the _____ voltage input!

ACTUAL REACTION:

IN NEUTRAL aqueous solutions, water Half-Reactions

IN ACIDIC aqueous solutions, water Half-reactions

Example:
What products are formed at the anode and cathode and what is the overall reaction when a solution containing HBr (aq) is electrolyzed using inert electrodes? Determine the minimum voltage which must be applied before the reaction will occur.

Step 1.

Step 2.

Step 3.

Step 4.

Step 5.

For SEATWORK/HOMEWORK: Do Excerises: **64 - 70**
PLO's W1 - W4, W8

REMINDERS:

UNIT TEST IS ON _____!!!
PLO'S ARE DUE _____!!!