

KEY

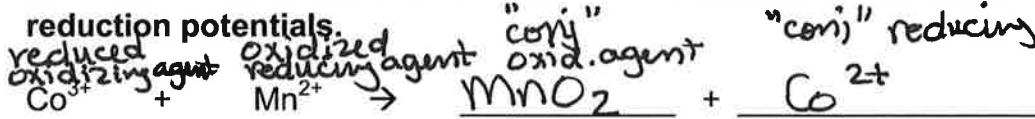
## In Class 11: Redox Reactions

Assign the oxidation states of all the elements in the following compounds:

Ti	$\text{CrPO}_4$	$\text{KHC}_2\text{O}_4$	$\text{CuCl}_4^{2-}$	$\text{K}_3\text{FeCl}_6$	$\text{SF}_4$
Ti O	Cr +3 P +5 O -2	K +1 H +1 C +3 O -2	Cu +2 Cl -1	K +1 Fe +3 Cl -1	S +4 F -1

For the following incomplete redox reaction, fill in the blanks in the reaction with plausible products. Label the oxidizing agent, reducing agent, and "conjugate" oxidizing agent and reducing agent. Your tables will help you predict possible products! Note that the reaction does not have to be balanced! Predict whether the reaction is favorable or not based on the reduction potentials.

one possible



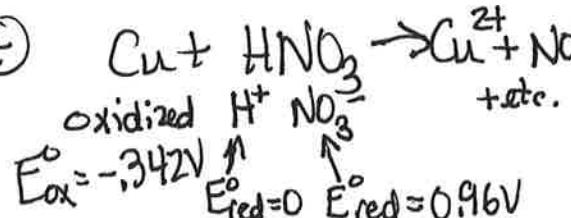
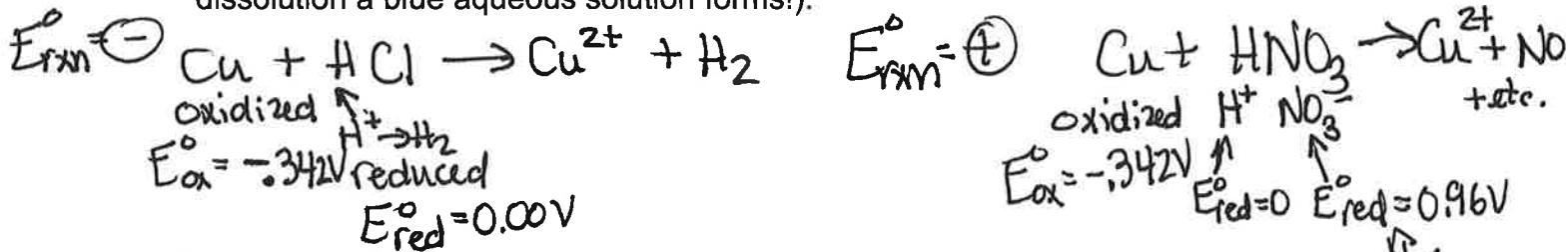
$$E_{\text{red}} = 1.92V \quad E_{\text{ox}}^{\circ} = -1.23V \quad E_{\text{red}}^{\circ} = 1.23V$$

$$E_{\text{rxn}}^{\circ} = 1.92V - 1.23V = 0.69V$$

$>0 \therefore \text{spontaneous}$   
(favored reaction)

Explain the following statement related to redox using equations, calculations, and words!

Cu metal "dissolves" (i.e. undergoes redox) in  $\text{HNO}_3$  but not in  $\text{HCl}$  (note: upon dissolution a blue aqueous solution forms!).



$$E_{\text{rxn}}^{\circ} = 0.96V - 0.342V = 0.618V$$

$>0 \therefore \text{favored}$

Extra problem:

