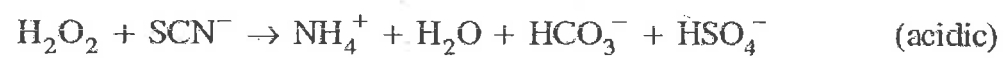


Redox Written Response:

1.

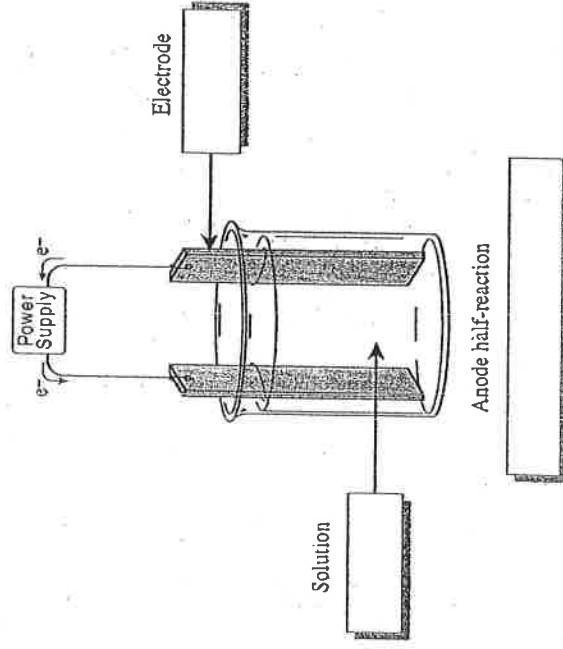
(4 marks)

Balance the following redox equation in acidic solution:



2. Draw a diagram of a standard electrochemical cell which could make use of the reaction $Zn_{(s)} + Cl_{2(g)} \rightarrow Zn^{2+}_{(aq)} + 2Cl^{-}_{(aq)}$. Identify all of the chemical species in the cell. (3 marks)

4. (3 marks)
During the electrolysis of an ionic solution it was observed that gas bubbles formed on the anode, and a solid formed on the cathode. On the diagram below, provide possible substances for the two parts indicated, and the anode half-reaction.



3. (3 marks)
A solution of $MnSO_4$ is electrolyzed using inert electrodes. Write the anode and cathode half-reactions and describe any observations at the cathode.
- Anode half-reaction: _____
- Cathode half-reaction: _____
- Cathode observation: _____