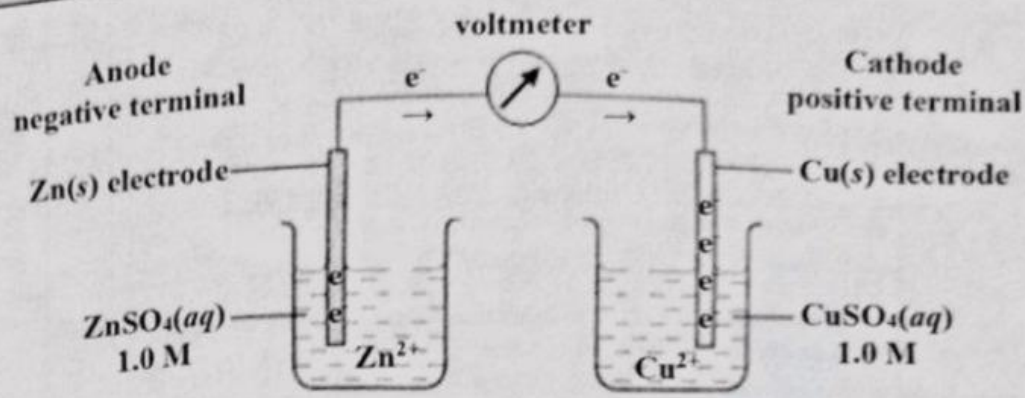
What happened if NO Salt Bridge is used in a galvanic cell?



Anode (Oxidation)	Cathode (Reduction) *MORE POSITIVE SRP VALUE
$Zn(s) \rightarrow Zn^{2+}(aq) + 2e^-$	$Cu^{2+}(aq) + 2e^- \rightarrow Cu(s)$
Zn^{2+} ions enter the solution. Causing an overall excess of positive charge.	Cu^{2+} ions leave the solution. - tinggal SO_4 Causing an overall excess of negative charge.
The reaction will stop if the net increase in positive or negative charge in respective half-cell is not neutralized. This excess charge build-up can be reduced by using a salt bridge.	

Exercise: Write half equation and overall equation for the following cell reactions.

OX
CAT

Anode (Ni) : $Ni(s) \rightarrow Ni^{2+}(aq) + 2e^-$

Cathode (Ag) : $(Ag^+(aq) + e^- \rightarrow Ag(s)) \times 2$

Overall equation : $Ni(s) + 2Ag^+(aq) \rightarrow Ni^{2+}(aq) + 2Ag(s)$

Anode (Co) : $Co(s) \rightarrow Co^{2+}(aq) + 2e$

Cathode (Cu) : $Cu^{2+}(aq) + 2e \rightarrow Cu(s)$

Overall equation : $Co(s) + Cu^{2+}(aq) \rightarrow Co^{2+}(aq) + Cu(s)$

Anode (Mg) : $Mg(s) \rightarrow Mg^{2+}(aq) + 2e^-$

Cathode (Sn) : $Sn^{2+}(aq) + 2e \rightarrow Sn(s)$

Overall equation : $Mg(s) + Sn^{2+}(aq) \rightarrow Mg^{2+}(aq) + Sn(s)$

Anode (Ba) : $Ba(s) \rightarrow Ba^{2+}(aq) + 2e^-$

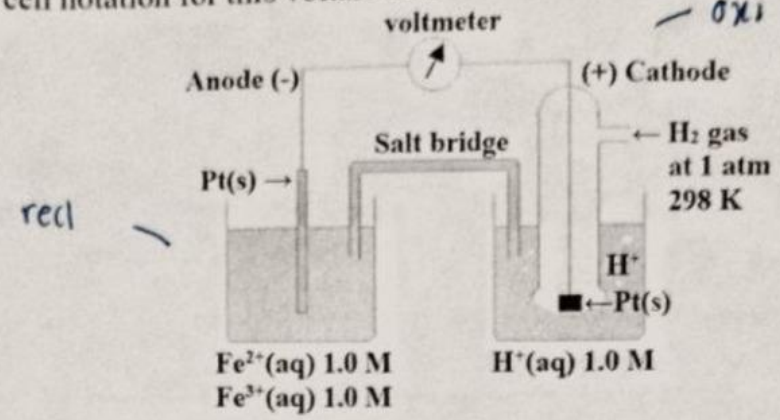
Cathode (Na) : $2Na^+(aq) + 2e^- \rightarrow 2Na(s)$

Overall equation : $Ba(s) + 2Na^+(aq) \rightarrow Ba^{2+}(aq) + 2Na(s)$

LIVEWORKSHEETS

Try this...

1. Write cell notation for this voltaic cell



Anode : $H_2(g) \rightarrow 2H^+(aq) + 2e$

Cathode : $(Fe^{3+}(aq) + e \rightarrow Fe^{2+}) \times 2$

Overall equation : $H_2(g) + 2Fe^{3+}(aq) \rightarrow 2H^+(aq) + 2Fe^{2+}(aq)$

Cell notation : $Pt(s) \mid H_2(g, 1atm) \mid H^+(aq, 1M) \parallel Fe^{3+}(aq, 1M) \mid Fe^{2+}(aq, 1M) \mid Pt$

2. Based on this cell notation below,

$(Pt(s) \mid Fe^{2+}(aq, 1M), Fe^{3+}(aq, 1M) \parallel (Cl_2(g, 1\ atm), Cl^-(aq, 1M) \mid Pt(s))$

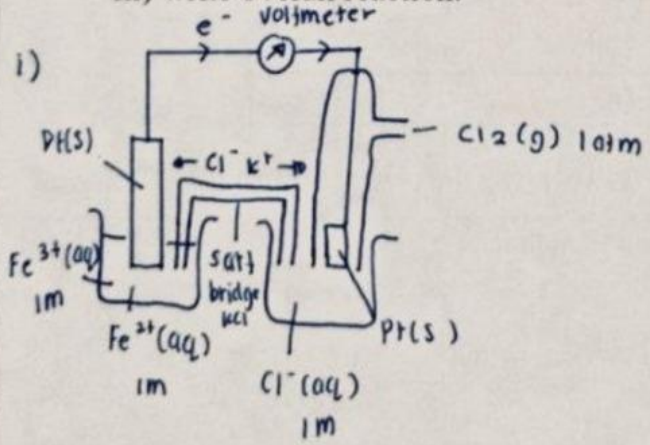
A B C

i) Draw a galvanic cell for this reaction

ii) write the reaction at anode and cathode

iii) write overall reaction.

i)



ii) Anode : $Fe^{2+}(aq) \rightarrow Fe^{3+}_{(aq)} + e^-$

Cathode : $Cl_2(g) + 2e^- \rightarrow 2Cl^-(aq)$

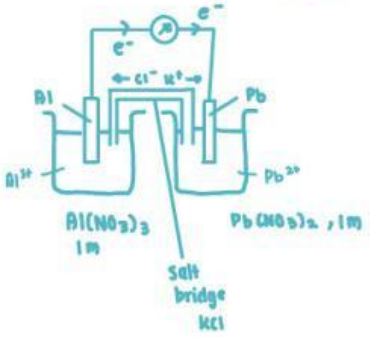
iii) $2Fe^{2+}(aq) + Cl_2(g) \rightarrow 2Fe^{3+}(aq) + 2Cl^-(aq)$

LIVEWORKSHEETS

3.1 : Galvanic Cell

Pb red
Al ox

1. i.



ii. To separate between two electrolytes.

iii. Anode : $(Al(s) \rightarrow Al^{3+}(aq) + 3e^-) \times 2$

Cathode : $(Pb^{2+}(aq) + 2e^- \rightarrow Pb(s)) \times 3$

Overall equation : $2Al(s) + 3Pb^{2+}(aq) \rightarrow 2Al^{3+}(aq) + 3Pb(s)$

iv. $Al(s) \mid Al^{3+}(aq, 1.0m) \parallel Pb^{2+}(aq, 1.0m) \mid Pb(s)$

2. i. Anode : Pb

Cathode : Ag

iii. $Pb(s) \mid Pb^{2+}(aq, 1m) \parallel Ag^{+}(aq, 1m) \mid Ag(s)$

LIVEWORKSHEETS