

IB Chemistry HL Notes

Redox Equilibria

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REDOX EQUILIBRIA

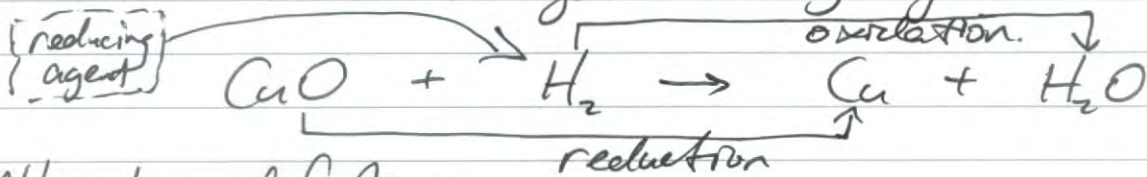
reduction
oxidation

Date

No.

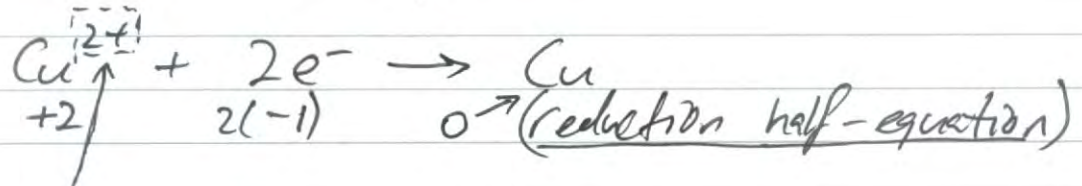
"OIL RIG"
oxidation is loss of e^- reduction is gain of e^-

- In a redox reaction, both will occur, hand-in-hand
- Oxidising reagent: can gain $e^- \rightarrow$ red ~~reduces~~ ^{oxidises} something else.
- Reducing reagent: can lose $e^- \rightarrow$ ~~oxidises~~ ^{reduces} something else.
- Reactive non-metals are good oxidising agents
- Reactive metals are good reducing agents.



- Alternative definition:
oxidation is gain of O / loss of H
reduction is gain of H / loss of O

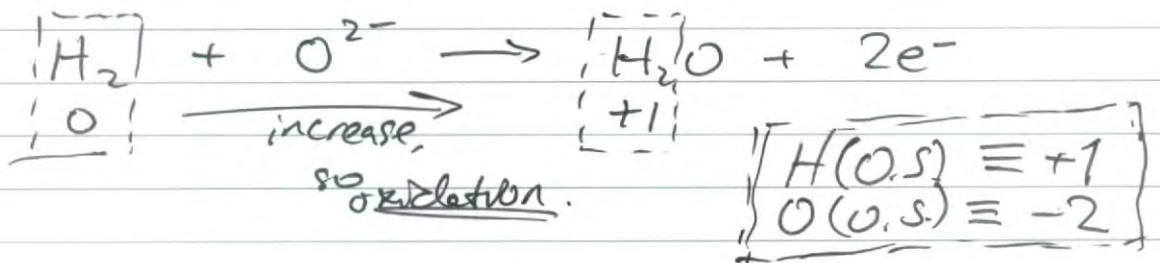
- In terms of electron exchange:

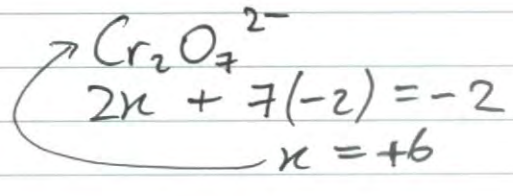
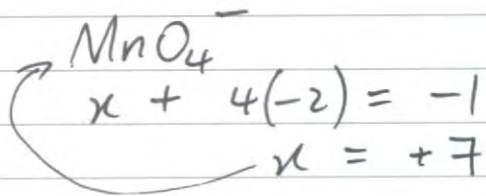


- Assign oxidation state to species in reaction.
- Decrease in O.S. is reduction.
- Increase in O.S. is oxidation.

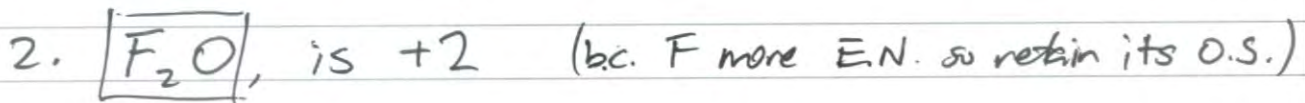


- O.S. of neutral compound is always 0.

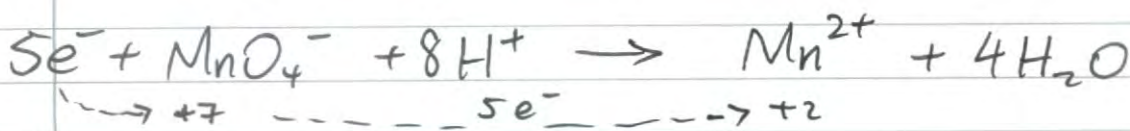
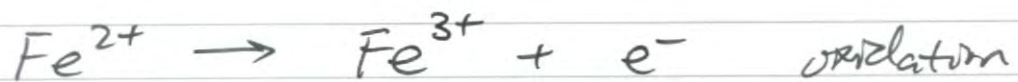




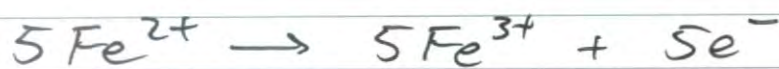
* O.S of O always -2 except:



- EG/ Fe^{2+} oxidised using MnO_4^-

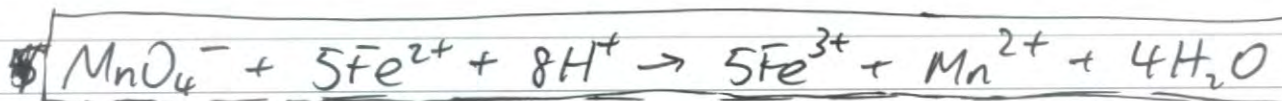


* Can add H^+ , e^- and H_2O to balance charges.

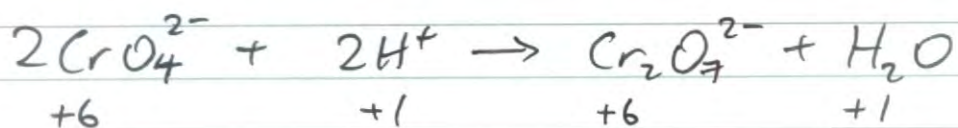


multiply for common

number of e^- , then add half-equations:



* Also can identify reactions with no redox.



no exchange in ^{OS.}, so
∴ not redox reaction.

→ is acid-base reaction.