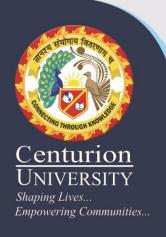
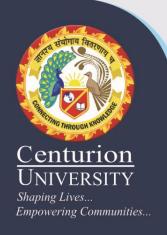


REDOX TITRATIONS - CONCEPTS AND PRINCIPLE

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- Oxidation-reduction reactions involve a transfer of electrons.
- The oxidising agent accepts electrons and the reducing agent gives electrons.
- In working out the equation for a redox reaction we can use the half-equation method. this method we use the half-equation for the oxidising agent and the half-equation for the reducing agent then add them together.



FORMAL POTENTIALS

• Standard potentials EB are evaluated with full regard to activity effects and with all ions present in simple form: they are really limiting or ideal values and are rarely observed in a potentiometric measurement.

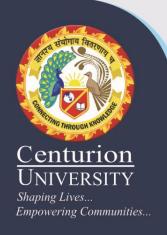
E = E' + 0.0591/n. log [Ox]/ [Red] at 25 degree celcius.

where E' is the formal potential and corresponds to the value of E at unit concentrations of oxidant and reductant, and the quantities in square brackets refer to molar concentrations

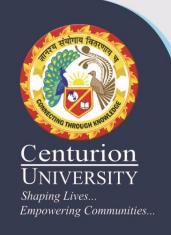
Centurion Internal oxidation-reduction indicators.

Shaping Lives... Empowering Communities...

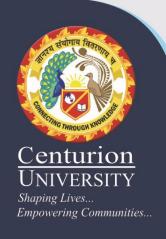
-base indicators are employed to mark the sudden change in pH during acid base titrations. Similarly an oxidation- reduction indicator should mark the sudden change in the oxidation potential in the neighbourhood of the equivalence point in an oxidation-reduction titration. The ideal oxidationreduction indicator will be one with an oxidation potential intermediate between that of the solution titrated and that of the titrant, and which exhibits a sharp, readily detectable colour change. An oxidation-reduction indicator (redox indicator) is a compound which exhibits different colours in the oxidised and reduced forms: Inox+ ne ____ InRed



- The oxidation and reduction should be reversible. At a potential E the ratio of the concentrations of the two forms is given by the Nernst equation:
- $E = E' + 0.0591/n. \log [Ox]/[Red]$
- where E~ is the standard (strictly the formal) potential of the indicator. If the colour intensities of the two forms are comparable a practical estimate of the colour-change interval corresponds to the change in the ratio [Inox]/[InRed] from 10 to /0' this leads to an interval.



• If the colour intensities of the two forms differ considerably the intermediate colour is attained at potential somewhat removed from E~, but the error is unlikely to exceed 0.06 volt. For a sharp colour change at the end point, Et;; should differ by about at least 0.15 volt from the standard (formal) potentials of the other systems involved in the reaction.



THANK YOU