Oxidation number and balancing redox reactions

Formulas and units, JEE Main. Status: Reviewed on 2026-11-20.

Result	Formula	Units or note
Sum rule	sum of oxidation numbers = charge on the species Valid when: neutral species or ion; use known O and H numbers	dimensionless
Exceptions for O	O is -1 in peroxides, -1/2 in superoxides, +2 in OF2	dimensionless
Exceptions for H	H is -1 in metal hydrides (NaH, CaH2)	dimensionless
n-factor	electrons lost or gained per formula unit = change in oxidation number x atoms changed Valid when: per formula unit, for the given reaction and medium	electrons
Titration at end point	n-factor1 x mol1 = n-factor2 x mol2 (or N1V1 = N2V2) Valid when: complete reaction at end point; n-factors for that reaction	mol or mmol
KMnO4 n-factor	5 in acid (Mn2+), 3 in neutral or weak base (MnO2), 1 in strong base (MnO4 2-)	electrons
Dichromate n-factor	6 per Cr2O7(2-) (to Cr3+) Valid when: acidic medium, Cr2O7 2- reduced to Cr3+	electrons
Basic medium balancing	balance as in acid, add OH- equal to H+ both sides, cancel water	not applicable

Full lesson with worked examples:
https://www.engineeringrise.in/learn/learn/jee-main/chemistry/redox-reactions-and-electrochemistry/oxidation-number-and-balancing

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