EngineeringRise

Preparations and titrimetric exercises

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

Result	Formula	Units or note
KMnO4 with oxalic acid	2MnO4- + 5H2C2O4 + 6H+ gives 2Mn2+ + 10CO2 + 8H2O Valid when: acidic medium (dilute H2SO4), warm 60 to 70 C for oxalic acid	mole ratio 2 : 5
KMnO4 with Fe2+	MnO4- + 5Fe2+ + 8H+ gives Mn2+ + 5Fe3+ + 4H2O Valid when: acidic medium (dilute H2SO4), cold	mole ratio 1 : 5
Molarity from titre (oxalic)	M(KMnO4) = M(ox) x V(ox) x 2 / (5 x V(KMnO4)) Valid when: titration in hot dilute H2SO4; titre read at first permanent pink	mol L^-1
Equivalent masses in acid	KMnO4 31.6; oxalic acid dihydrate 63; Mohr's salt 392	g per equivalent
Molar masses	Mohr's salt 392; potash alum 474; acetanilide 135; p-nitroacetanilide 180; iodoform 393.7	g mol^-1
Percentage yield	actual mass / theoretical mass x 100; multi-step yields multiply Valid when: yields as fractions; successive steps multiply	percent
Iodoform preparation	CH3COCH3 + 3I2 + 4NaOH gives CHI3 + CH3COONa + 3NaI + 3H2O Valid when: excess I2 and NaOH; methyl ketone; 1 mole ketone gives 1 mole CHI3	mole ratio 1 : 3 : 4
Indicator ranges	methyl orange 3.1 to 4.4; phenolphthalein 8.3 to 10.0 Valid when: indicator ranges at room temperature	pH
Conditions	oxalic acid: 60 to 70 degrees C, dilute H2SO4; Mohr's salt: cold, dilute H2SO4; KMnO4 self-indicator	temperature, acid

Full lesson with worked examples:
https://www.engineeringrise.in/learn/learn/jee-main/chemistry/principles-related-to-practical-chemistry/preparations-and-titrimetric-ex

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