A QUICK GLANCE AT THE NAMED REACTIONS

Name of the reaction	Substrate	Reagent	Medium / condition	Product	Remarks
Oxymercuration-Demercuration	Alkene	$HgSO_4$ or $Hg(OAC)_2/NaBH_4$	Acidic	Alcohol	Addition of H_2O according to Markovnikov's rule.
Hydroboration Oxidiation	Alkene	B_2H_6/H_2O_2	Acidic	Alcohol	Addition of H_2O according to antimorkovnikov's rule
Williamson's synthesis	Alkoxide anion	Alkyl halide	Basic	Ethers	The alkyl halide must be 1°
Dow's process	C_6H_5Cl	NaOH	360°C / 320 atm	Phenol	Benzyne intermediate
Cummene Hydroperoxide	Cummene	O_2 / H^+	Acidic	Phenol	Rearrangement of aromatic ring
Kolbe's synthesis	$C_6H_5O^-Na^+$	CO_2 / H^+	125°C / 6 atm	Salicylic acid	o-isomer is more favoured
Riemer-Tiemman reaction	C_6H_5OH	$CHCl_3$ / NaOH	Basic	Salicylaldehyde (o- & p-isomers)	Dichloro carbene is formed.
Rosenmund's reduction	R-COCl	$Pd/BaSO_4$	Basic	R-CHO	Conversion of acid halide to aldehyde
Stephen's Reduction	R-CN	Sn/HCl	Acidic	R-CHO	Formation of imines, and then hydrolysis
Aldol condensation	R-CHO / R_2CO	Dil. Base, (or) acid	Acidic (or basic)	Aldol (or) ketol	For carbonyls having α-hydrogens
Perkin's reaction	C_6H_5CHO	$(CH_3CO)_2O$	Basic	Cinnamic acid	Mechanism is same as that of aldol
Claisen condensation	Ethyl acetate	$NaOC_2H_5$	Basic	Aceto acetic ester	-do-
Dieckmann's condensation	Compounds having 2 ester groups in the same molecule	$NaOC_2H_5$	Basic	3-oxo-esters	Intramolecular claisen condensation
Cannizaro's reaction	R-CHO	50% OH^-	Basic	$R-CH_2OH$, $R-CO_2^-$	For carbonyls with no α-hydrogen atom
MPV reduction	Ketones	$Al(O^iPr)_3$ / ^iPrOH	Acidic	2°alcohols	Excess of isopropyl alcohol has to be used
Oppenauer oxidation	2°alcohols	$Al(O^iPr)_3$ / acetone	Acidic	Ketones	Excess of acetone has to be used
Tischenko reaction	R-CHO	$Al(O^iPr)_3$	Acidic	Esters	Mechanism is same as of Cannizaro's reaction
Etard's reaction	Toluene	CrO_2Cl_2	Acidic	Benzaldehyde	Specific for methyl benzenes
Gattermann aldehyde synthesis	Benzene	HCN/HCl; A^lCl_3	Acidic	-do-	Imines are formed
Gattermann-Koch aldehyde synthesis	Benzene	CO/HCl; $AlCl_3$	Acidic	-do-	Not for rings having deactivating groups
Sommelet's reaction	Benzylchloride	$(CH_2)_6N_4$	Basic	-do-	--
Benzoin condensation	Benzaldehyde	KCN	Basic	Benzoin	Mechanism has a lot of tautomeric forms
HVZ reaction	$R-CH_2-CO_2H$	P/Cl_2 (Br_2,I_2)	Acidic	α-halo acids	--
Hoffmann Bromamide reaction	Amides	Br_2/KOH	Basic	Amines	Rearrangement takes place