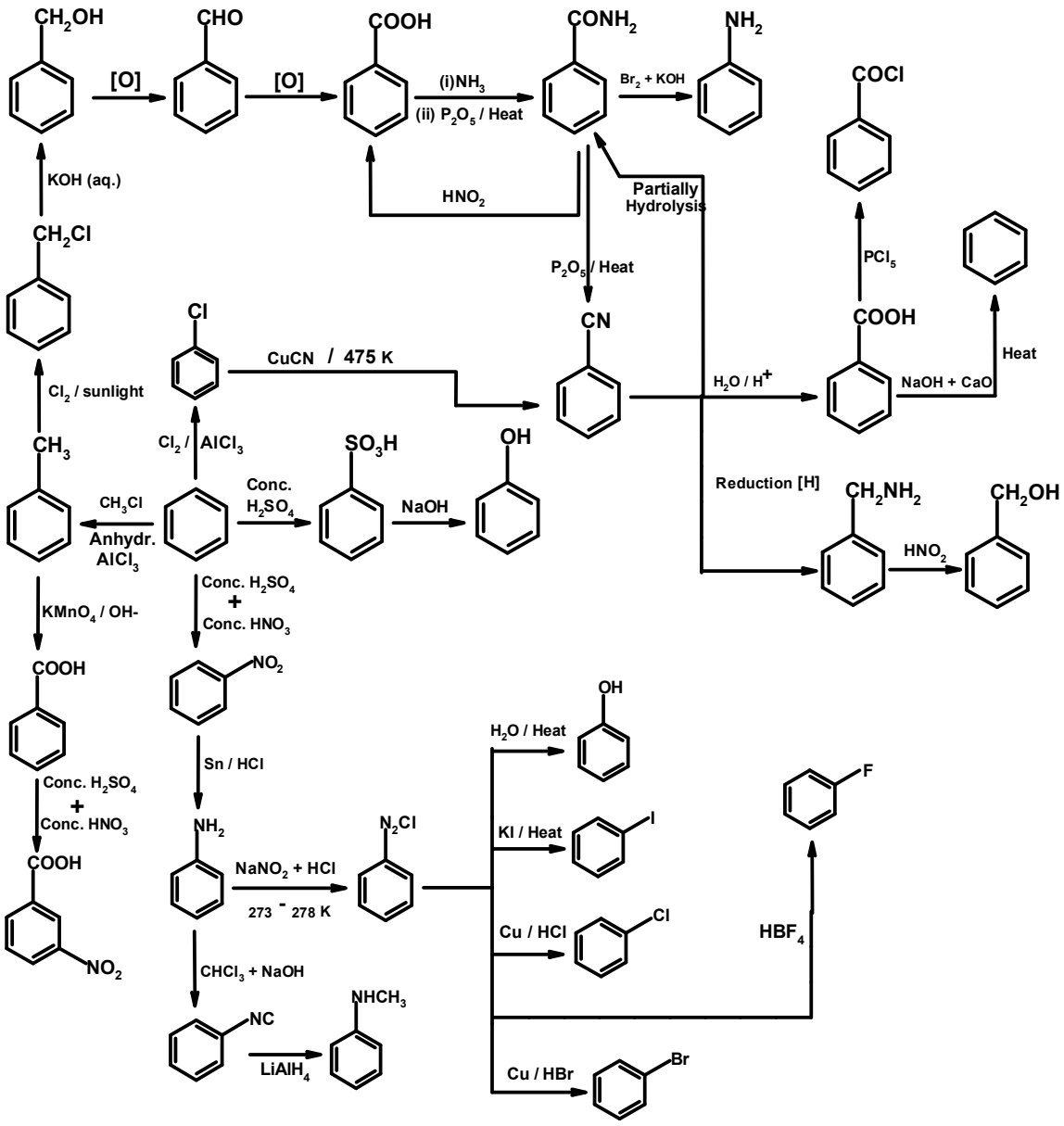
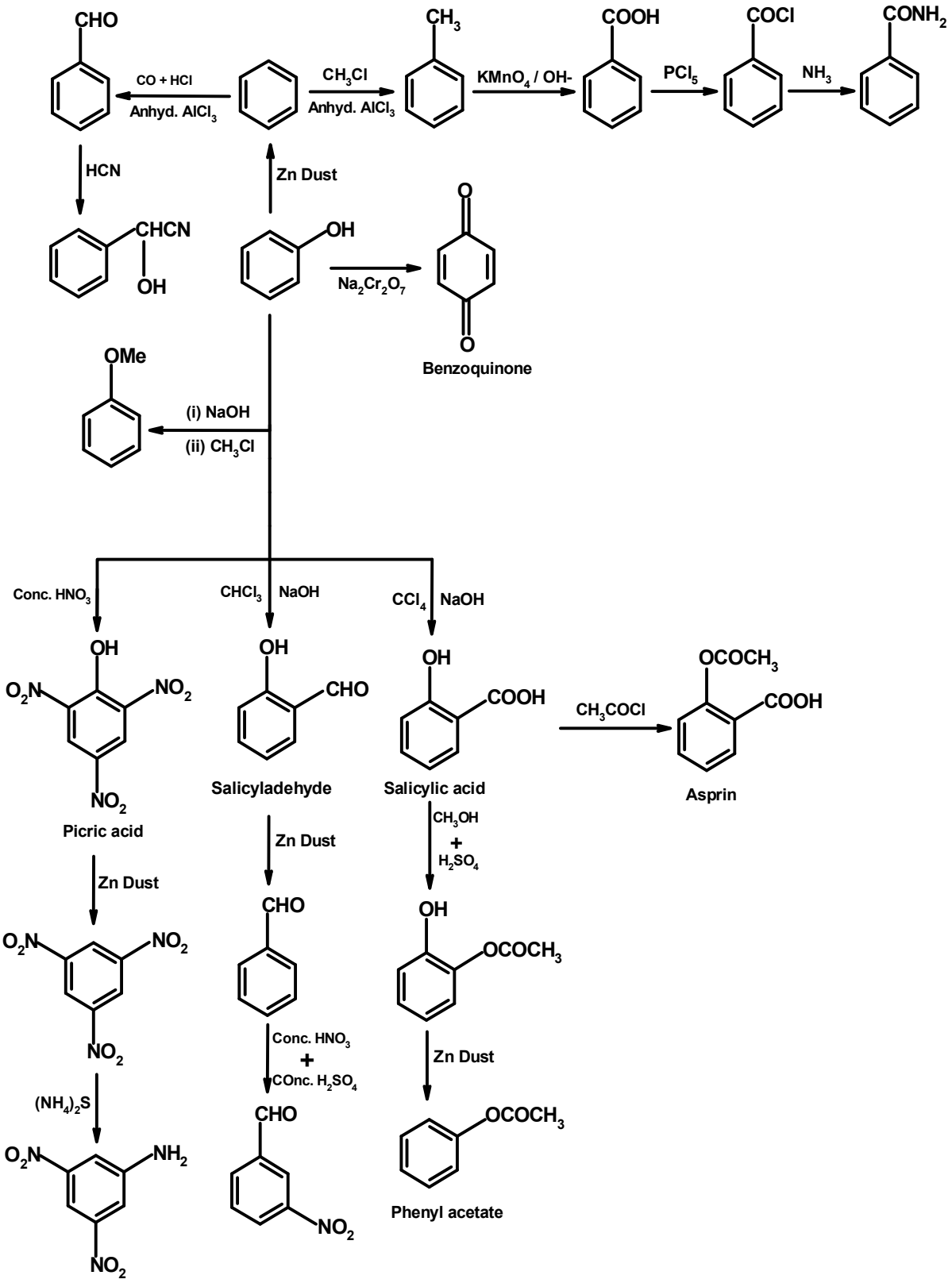
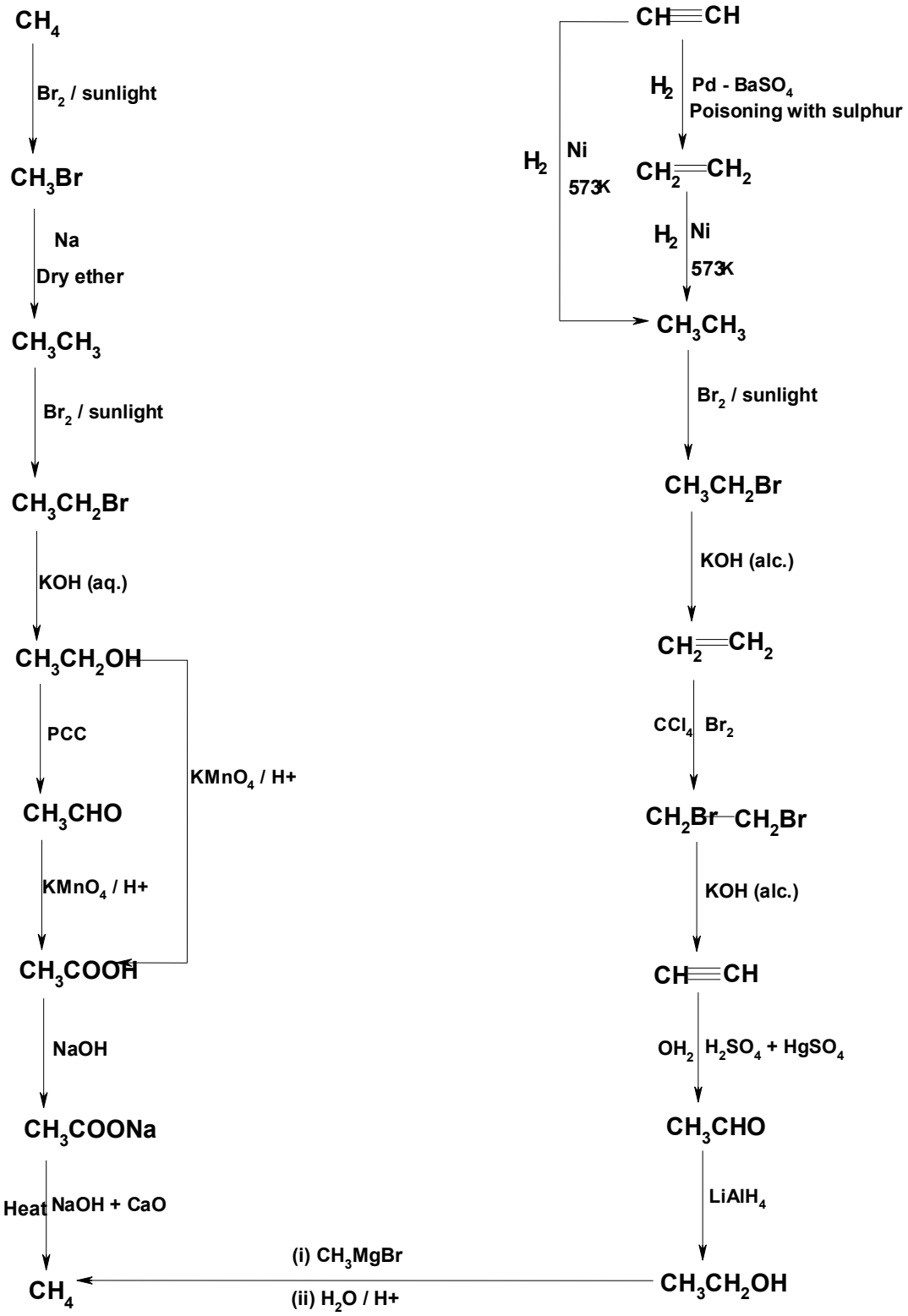
DAV CENTENARY PUBLIC SCHOOL

ROAD MAP FOR AROMATIC CONVERSIONS

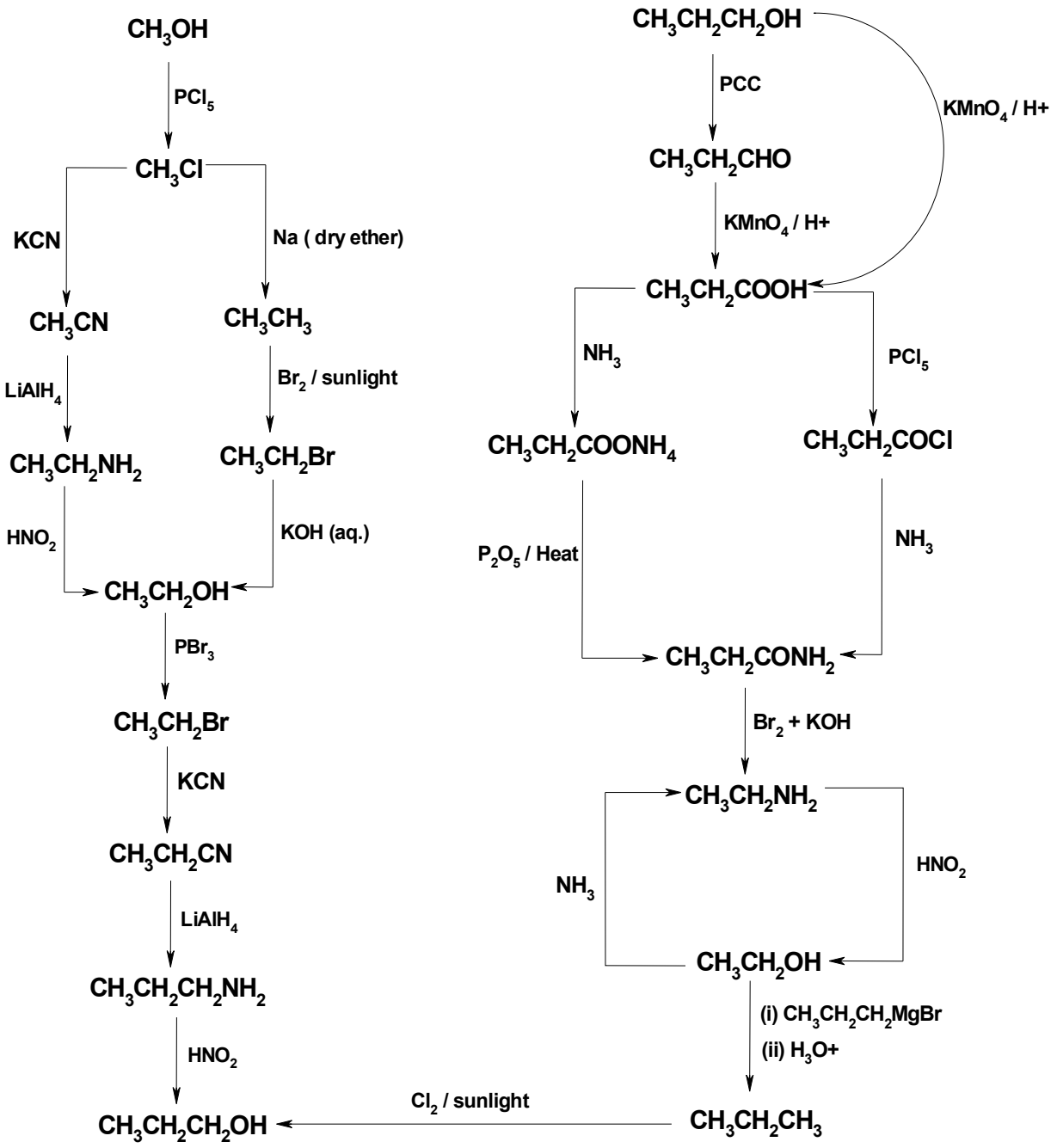



CHO
CO + HCl
Anhyd. AlCl3
CH3Cl
Anhyd. AlCl3
CH3
KMnO4 / OH-
COOH
PCl5
COCl
NH3
CONH2
HCN
Zn Dust
CHCN
OH
OH
Na2Cr2O7
O
O
Benzoquinone
OMe
(i) NaOH
(ii) CH3Cl
Conc. HNO3
CHCl3
NaOH
CCl4
NaOH
OH
O2N
NO2
NO2
Picric acid
OH
CHO
Salicyladehyde
OH
COOH
Salicylic acid
CH3COCl
OCOCH3
COOH
Asprin
Zn Dust
CH3OH
+
H2SO4
Zn Dust
CHO
OH
OCOCH3
O2N
NO2
NO2
Conc. HNO3
+
COnc. H2SO4
Zn Dust
(NH4)2S
CHO
OCOCH3
O2N
NH2
NO2
NO2
Phenyl acetate

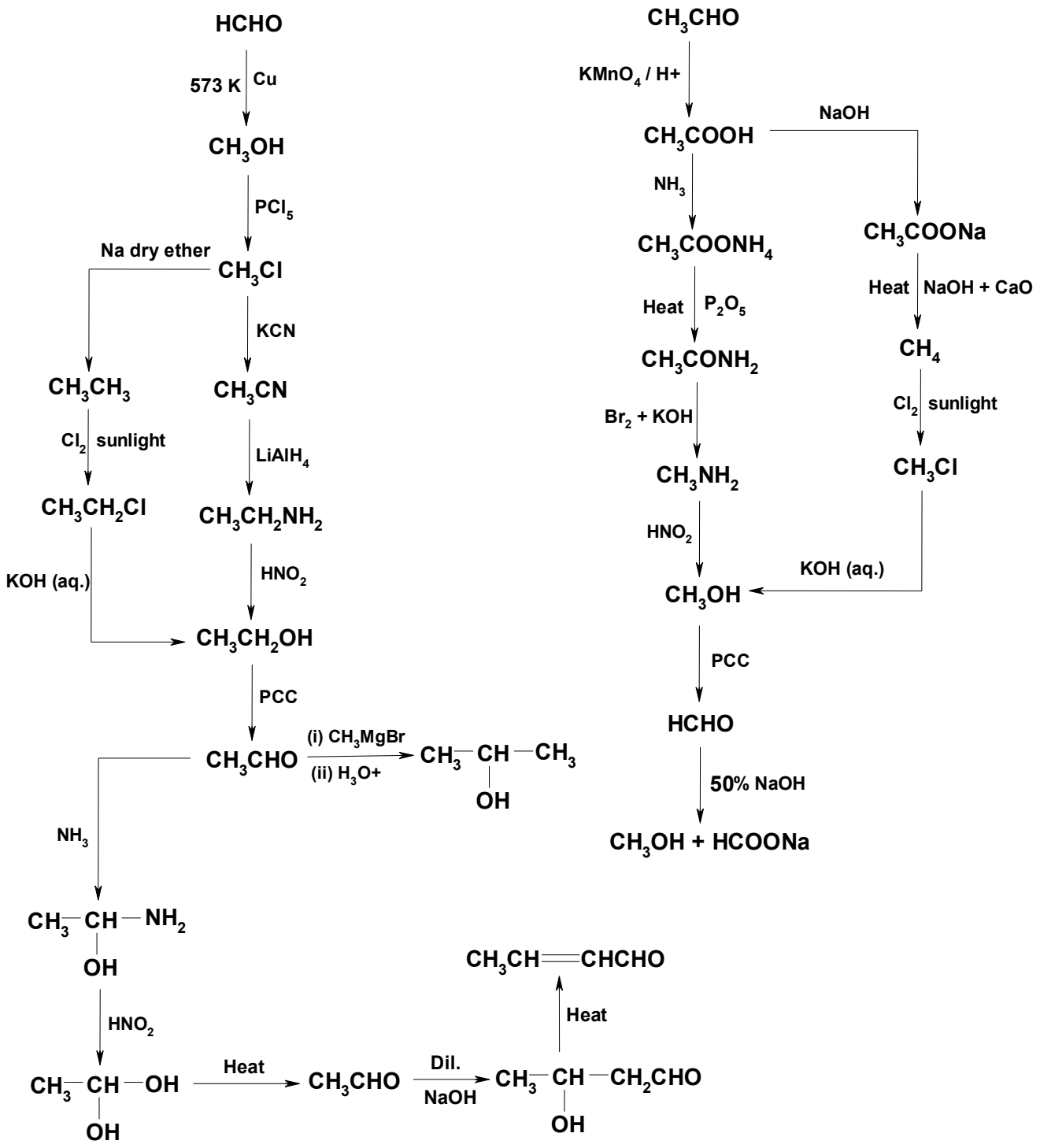
ROAD MAP FOR ALIPHATIC CONVERSIONS (HYDROCARBONS)



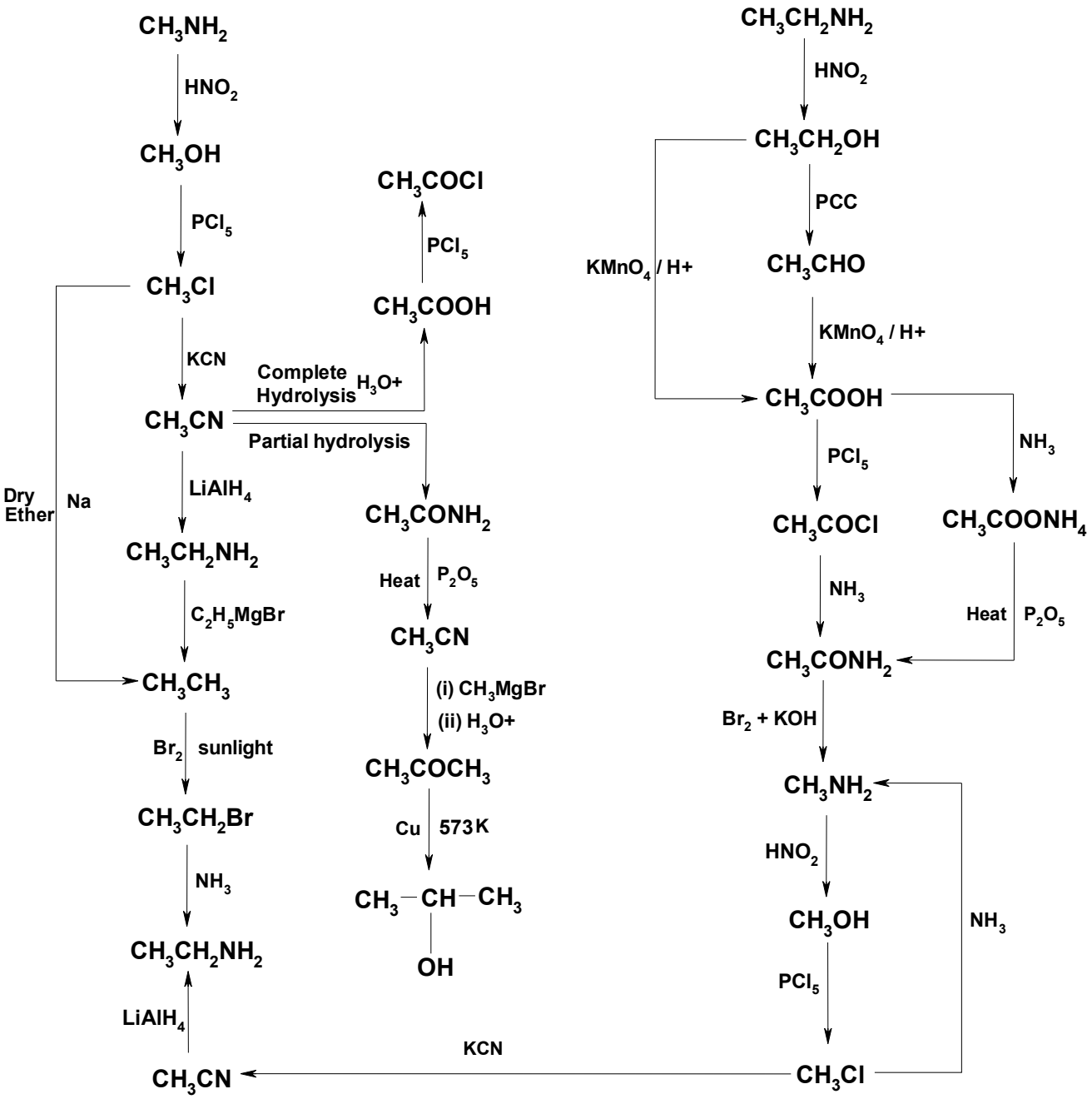
ROAD MAP FOR ALIPHATIC CONVERSIONS (ALCOHOLS)



ROAD MAP FOR ALIPHATIC CONVERSIONS (ALDEHYDE)

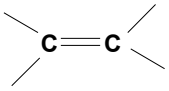
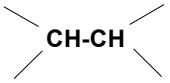
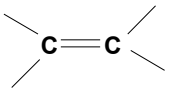
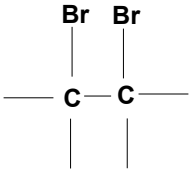
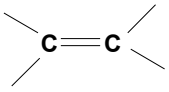
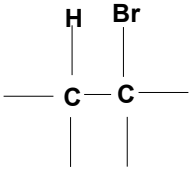
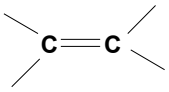
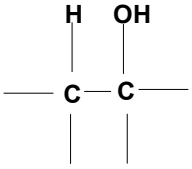


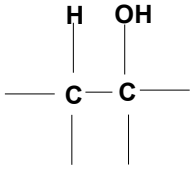
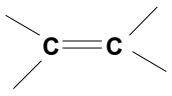
ROAD MAP FOR ALIPHATIC CONVERSIONS (AMINES)

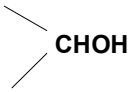
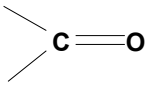
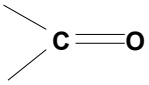
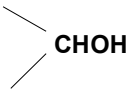
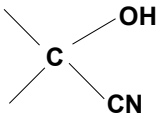
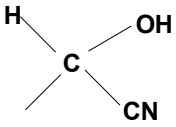


SYNTHETIC PATHWAYS (Aliphatic Compounds)

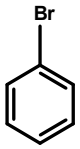
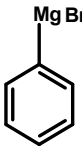
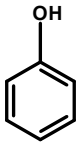
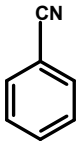
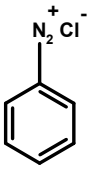
Reagents and conditions for specific functional group changes

To Change	Into	Name of organic comp.	Reagent and reaction conditions
-H Alkane	-Cl	Alkyl chloride	Cl_2 / sunlight
-H Alkane	-Br	Alkyl bromide	Br_2 / sunlight
 alkene		Alkane	H_2 / Ni 573K
 alkene		1,2-Dibromo alkane	Br_2 / CCl_4
 alkene		Bromo alkane	HBr
 alkene		Alcohol	H_2SO_4(dil.) in the presence of H_2O
R-Br, R-Cl, R-I Alkyl halide	-OH	Alcohol	NaOH(aq) or KOH(aq) or AgOH(aq)
	-CN	Cyanide	KCN
	$-NH_2$	Amine	NH_3
	$-OCOCH_3$	Ester	CH_3COOAg
	-MgBr	Grignard reagent	Mg turnings in dry ether
	-COOH	Carboxylic acid	(i) KCN then (ii) H_3O^+

 Alcohol		Alkene	Conc. H_2SO_4 at 443K
$-CH_2OH$ 1^0 alcohol	-CHO	Aldehyde	Cu/573K or PCC (oxidation)

 2^0 alcohol		Ketone	Cu/573K or $KMnO_4/H^+$(oxidation)
 Ketone		2^0 alcohol	H_2/Ni at 573K Or $LiAlH_4$
		Ketone cyanohydrin	HCN
-CHO Aldehyde	-COOH	Carboxylic acid	$KMnO_4/H^+$(oxidation)
	$-CH_2OH$	1^0 alcohol	H_2/Ni at 573K Or $LiAlH_4$
		Aldehyde cyanohydrin	HCN
-COOH Carboxylic acid	$-COO^-Na^+$	Sodium salt of acid	NaOH(aq) or Na_2CO_3 or $NaHCO_3$
	-COOR	Ester	ROH in the presence of Conc. H_2SO_4
	-COCl	Carbonyl chloride	PCl_5 or $SOCl_2$
	$-CH_2OH$	1^0 alcohol	$LiAlH_4$
	$-CONH_2$	Amide	(i)NH_3 (ii) Heat
-COCl Carbonyl chloride	-COOH	Carboxylic acid	H_2O
	-COOAr Ar = Benzene	Ester	ArOH
	-CO O COR	Acid anhydride	$RCOO^-Na^+$
	$-CH_2OH$	1^0 alcohol	$LiAlH_4$
-COOR Ester	-COOH	Carboxylic acid	H_3O^+
	$-COO^-Na^+$	Sodium salt of acid	NaOH(aq)/ H_3O^+
	$-CH_2OH$	1^0 alcohol	$LiAlH_4$

SYNTHETIC PATHWAYS (Aromatic Compounds)

To Convert	Into	Reagents and conditions
 Benzene	-Cl	Cl_2 / Anhydrous $AlCl_3$
	-Br	Br_2 / Anhydrous $AlBr_3$
	$-NO_2$	Conc.HNO_3 + Conc. H_2SO_4
	-R	RCl / Anhydrous $AlCl_3$
	$-SO_3H$	Conc. H_2SO_4
 Bromobenzene	-MgBr	Mg turnings in dry ether
 Phenyl magnesium bromide	-OH	(i)O_2 (ii) aqueous acid
	$-CH_2OH$	(i) HCHO (ii) H_3O^+
	-COOH	(i)CO_2 (ii) H_3O^+
 Phenol	-ONa	NaOH(aq) at 623K and 300atm
	-OCOR	RCOCl
	-OCOAr	ArCOCl / NaOH(aq)
 Benzonitrile	$-CONH_2$	Partial hydrolysis (H_3O^+)
	-COOH	Complete hydrolysis (H_3O^+)
	$-CH_2NH_2$	$LiAlH_4$
 Benzene diazonium chloride	-OH	H_2O / Heat
	-Cl	Cu / HCl
	-Br	Cu / HBr
	-I	KI / Heat
	-CN	KCN / CuCN
	-F	(i) HBF_4 (ii) Heat
	-H	H_3PO_2 OR Ethanol
	$-NO_2$	(i) HBF_4 (ii) $NaNO_2$ / Δ