• Points to remember in Oxidation Reaction

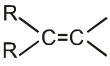
(1) $KMnO_4$ (in both medium) or $K_2Cr_2O_7$ (in acidic medium)

Aldehyde $\longrightarrow$ Acid

1° Alcohol $\longrightarrow$ Acid

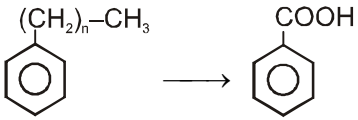
2° Alcohol $\longrightarrow$ Ketone

3° Alcohol $\longrightarrow$ No reaction

Alkene :  $\longrightarrow R_2C{=}O + R'COOH$

Alkyne : $R{-}C{\equiv}C{-}R' \longrightarrow RCOOH + R'COOH$

Oxidation of aromatic side chain :



(2) PCC (Pyridinium chloro chromate)
CrO_3/HCl/Pyridine

1° ROH $\longrightarrow$ Aldehyde

2° ROH $\longrightarrow$ Ketone

3° ROH $\longrightarrow$ No reaction

(3) Cu/573 K

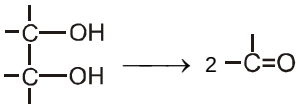
1°Alcohol $\longrightarrow$ Aldehyde

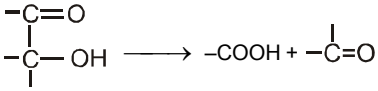
2° Alcohol $\longrightarrow$ Ketone

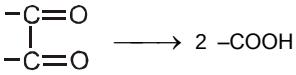
3° Alcohol $\longrightarrow$ Alkene

(4) HIO_4 (Periodic Acid)

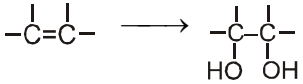
Condition : Vicinal diol, α- Hydroxy ketone & α-diketone can oxidise by HIO_4



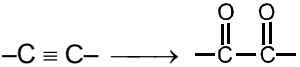




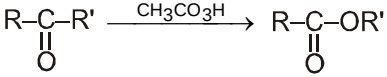
(5) Baeyer's reagent and OsO_4 + $NaHSO_3$



stereospecific syn addition



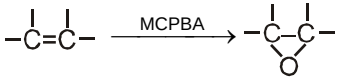
(6) Baeyer–Villiger oxidation (m-CPBA or CH_3CO_3H)



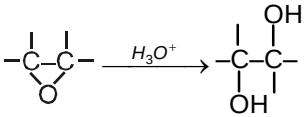
Priority of shift (O accepting aptitude)

R' = Ph > Ethyl > Methyl

(7) Prilezhaev reaction



Anti hydroxylation :



(8) oxidation by HNO_3

Aldehyde ⟶ Acid

1° Alcohol ⟶ Acid

2° Alcohol ⟶ no recation

3° Alcohol ⟶ No reaction

(9) oxidation by MnO_2

1° Alcohol $\longrightarrow$ Aldehyde

2° Alcohol $\longrightarrow$ Ketone

3° Alcohol $\longrightarrow$ No reaction

Note : Only allylic and benzylic alcohols are oxidised by MnO_2.