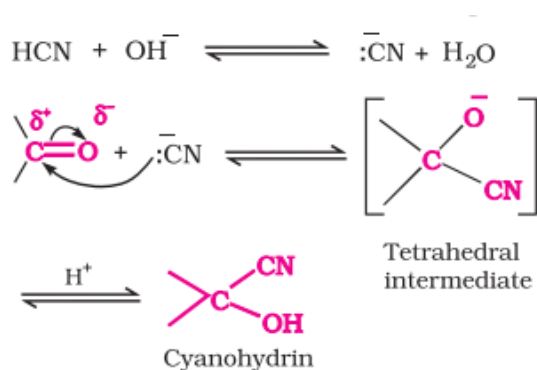
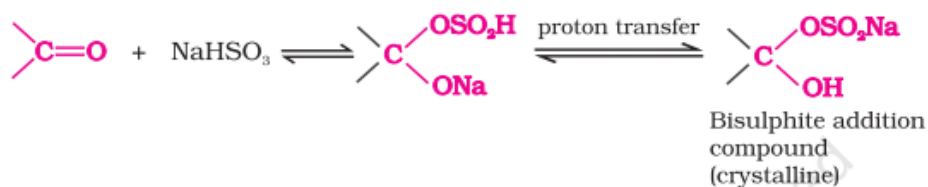


## Reactions Common to Aldehydes and Ketones

Addition of HCN:

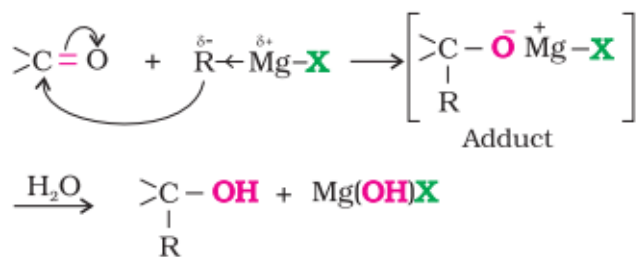


Reaction with  $\text{NaHSO}_3$ : Aldehydes and ketones form bisulphite with  $\text{NaHSO}_3$  which is insoluble in *aq*  $\text{NaHSO}_3$ :

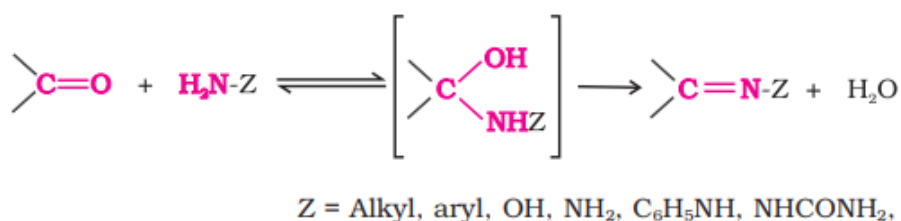


The above reaction can be used for separation of aldehydes and ketones from other organic compounds.

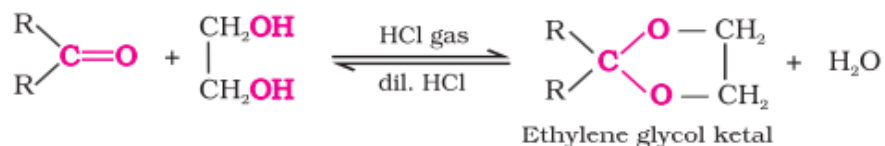
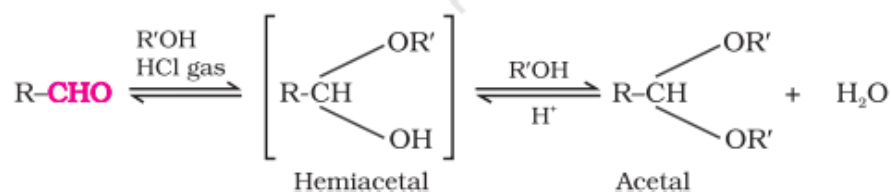
Grignard's reagent addition:



Reaction with ammonia and amines:



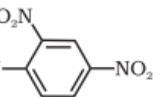
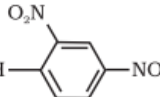



Reaction with alcohols:



This reaction is used for protection of carbonyl group in a reaction

**Table 12.2: Some N-Substituted Derivatives of Aldehydes and Ketones (>C=N-Z)**

Z	Reagent name	Carbonyl derivative	Product name
-H	Ammonia	$\text{>C=NH}$	Imine
-R	Amine	$\text{>C=NR}$	Substituted imine (Schiff's base)
-OH	Hydroxylamine	$\text{>C=N-OH}$	Oxime
-NH <sub>2</sub>	Hydrazine	$\text{>C=N-NH}_2$	Hydrazone
-HN- 	Phenylhydrazine	$\text{>C=N-NH-}$ 	Phenylhydrazone
-HN- 	2,4-Dinitrophenylhydrazine	$\text{>C=N-NH-}$ 	2,4 Dinitrophenylhydrazone
-NH- 	Semicarbazide	$\text{>C=N-NH-C(=O)-NH}_2$	Semicarbazone

\* 2,4-DNP-derivatives are yellow, orange or red solids, useful for characterisation of aldehydes and ketones.

## Reduction of Aldehyde of Ketones

