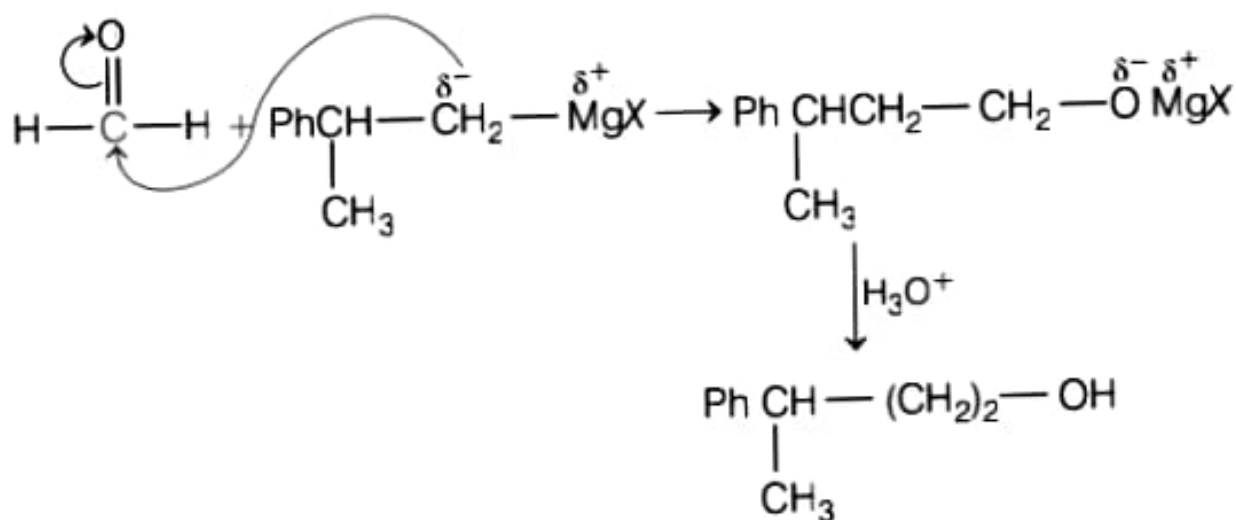


(2019 Main, 12 Jan I)

- (a) $\text{CH}_3\text{CH}_2\text{COCH}_3 + \text{PhMgX}$
- (b) $\text{PhCOCH}_3 + \text{CH}_3\text{CH}_2\text{MgX}$
- (c) $\text{PhCOCH}_2\text{CH}_3 + \text{CH}_3\text{MgX}$
- (d) $\text{HCHO} + \text{PhCH}(\text{CH}_3)\text{CH}_2\text{MgX}$

$$\text{CH}_3\text{CH}_2-\overset{\text{OH}}{\underset{\text{Ph}}{\text{C}}}-\text{CH}_3$$
 cannot be prepared by HCHO and

$\text{PhCH}(\text{CH}_3)\text{CH}_2\text{MgX}$. This can be easily illustrated by following reaction.



The obtained product is not the required substance. While option (a), (b) and (c) can readily prepare the required substance.

The reactions are as follows :

