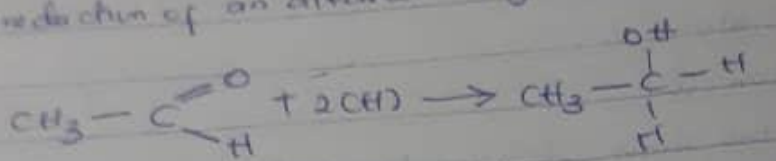
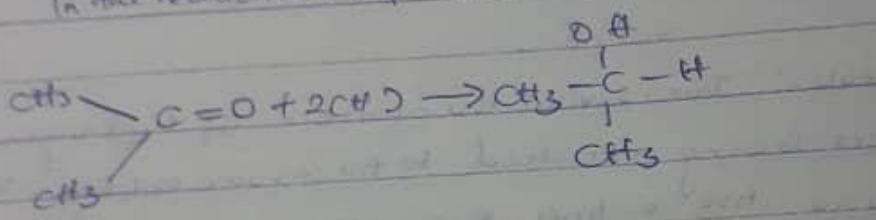
solution

In the reduction of an alkanal we get an alkanol.

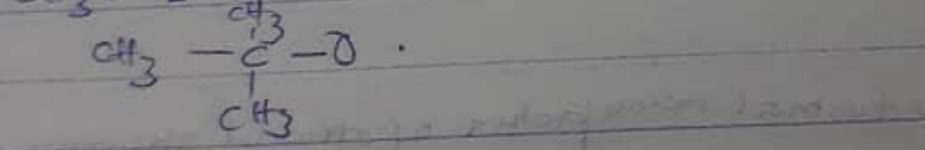


In the reduction of an alkanone we get propan-2-ol



* In the grignard synthesis of alkanols react a named grignard reagent with $CH_3CH_2CH_2CH_2C=OCH_2CH_2CH_3$ show the reaction.

Solution.



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1) Discuss the two major classification of Alkanols. Give two examples each for each class

Solution

1) Primary alkanols: This is when the number of hydrogen atoms that is being attached to the carbon holding the hydroxyl group are two or three e.g CH_3CH_2OH, CH_3OH

2) Secondary alkanols: This is when the number of hydrogen atom that is being attached to the carbon holding the hydroxyl group are one e.g $CH_3CH(OH)CH_3$, $CH_3CH_2CH(OH)$, $CH_3CH_2CH_2$.

2 Discuss the industrial manufacture of ethanol showing all reaction equations and necessary enzymes and temperature of reaction

Solution

$$2(C_6H_{12}O_6)n + nH_2O \xrightarrow[60^\circ C]{diatase} nC_{12}H_{22}O_{11}$$

carbohydrate → maltose

$$C_{12}H_{22}O_{11} + H_2O \xrightarrow[15^\circ C]{maltase} 2C_6H_{12}O_6$$

maltose → glucose

$$C_6H_{12}O_6 \xrightarrow[15^\circ C]{zymase} CH_3CH_2OH + 2CO_2(g)$$

glucose → ethanol

3 Determine the product obtained in the reduction of alkanal and alkanone. Use a specific example for each and show the equation of reaction -