

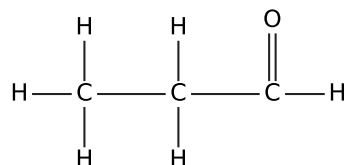
Solutions

Original marking guidance: B1 for each stated chemically correct feature.

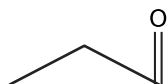
2.1 $\text{CH}_3\text{CH}_2\text{CHO}$.

Propanal

Displayed formula



Skeletal formula

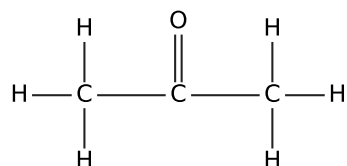


Displayed: B1 correct carbon skeleton/terminal carbonyl and B1 all H/bonds correct. Skeletal: B1 three-carbon skeleton with terminal $\text{C}=\text{O}$ and B1 correct implied carbon valences.

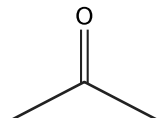
2.2 CH_3COCH_3 ; the -one suffix denotes an internal ketone carbonyl, whereas -al denotes the terminal aldehyde group.

Propanone

Displayed formula



Skeletal formula

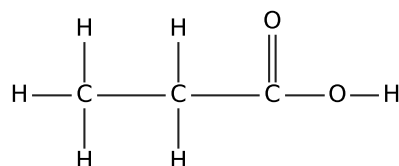


Displayed: B1 correct carbon skeleton/central carbonyl and B1 all H/bonds correct. Skeletal: B1 three-carbon skeleton with internal $\text{C}=\text{O}$ and B1 correct implied carbon valences.

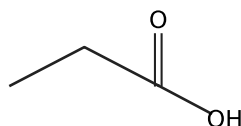
2.3 $\text{CH}_3\text{CH}_2\text{COOH}$.

Propanoic acid

Displayed formula



Skeletal formula

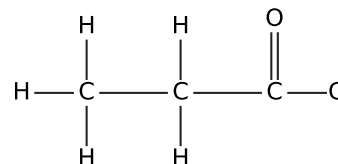


Displayed: B1 correct acid skeleton and B1 every atom/bond correct. Skeletal: B1 three-carbon acid-side skeleton and B1 $\text{C}=\text{O}$ plus explicitly shown OH.

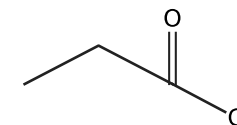
3.1 $\text{CH}_3\text{CH}_2\text{COCl}$; water gives propanoic acid, with HCl also formed.

Propanoyl chloride

Displayed formula



Skeletal formula

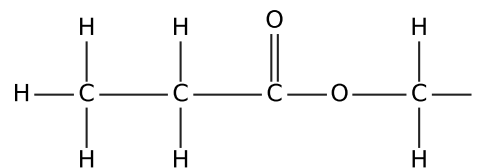


Displayed: B1 correct acyl skeleton and B1 all atoms/bonds correct. Skeletal: B1 three-carbon skeleton and B1 terminal $\text{C}=\text{O}/\text{Cl}$ connectivity.

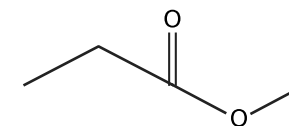
3.2 Methyl propanoate, $\text{CH}_3\text{CH}_2\text{COOCH}_3$.

Methyl propanoate

Displayed formula



Skeletal formula



Displayed: B1 correct three-carbon acid-side skeleton and B1 $-\text{CO}-\text{O}-\text{CH}_3$ with all H correct. Skeletal: B1 correct acid-side skeleton/ $\text{C}=\text{O}$ and B1 explicit ester O with one carbon on its methyl side.

3.3 $\text{CH}_3\text{COOCH}_2\text{CH}_3$ and $\text{CH}_3\text{CH}_2\text{COOCH}_3$. Both have $\text{C}_4\text{H}_8\text{O}_2$; same molecular formula but different atom connectivity makes them structural isomers. Their hydrolysis alcohols are ethanol and methanol respectively.