

2023 Ch H1 Q22

Section: Nature's Chemistry

Topic: Carbonyl Compounds

Question Summary

Reduction of 4-methylpentan-2-one to the corresponding alcohol results in the molecule:

- A: gaining 2 g per mole
- B: losing 2 g per mole
- C: losing 16 g per mole
- D: not changing in mass.

Worked Solution

The reduction of a ketone ($\text{C}=\text{O}$) to a secondary alcohol ($-\text{CHOH}-$) involves the addition of hydrogen (H_2). This adds 2 hydrogen atoms to the molecule.

- Mass of $\text{H}_2 = 2$ g per mole.
- Therefore, the molecule gains 2 g per mole during reduction.

Final Answer

A — Gaining 2 g per mole

Revision Tips

- Reduction of ketones or aldehydes adds hydrogen across the $\text{C}=\text{O}$ bond.
- Always think in terms of what is added or removed in redox processes.
- Mass changes in reactions can be checked by considering what atoms are gained or lost.