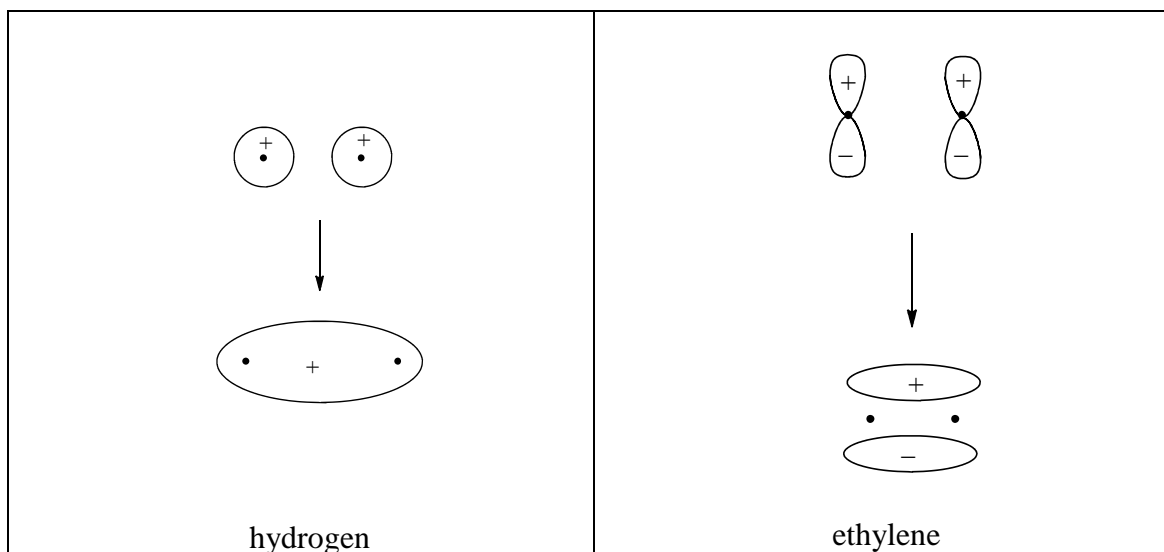


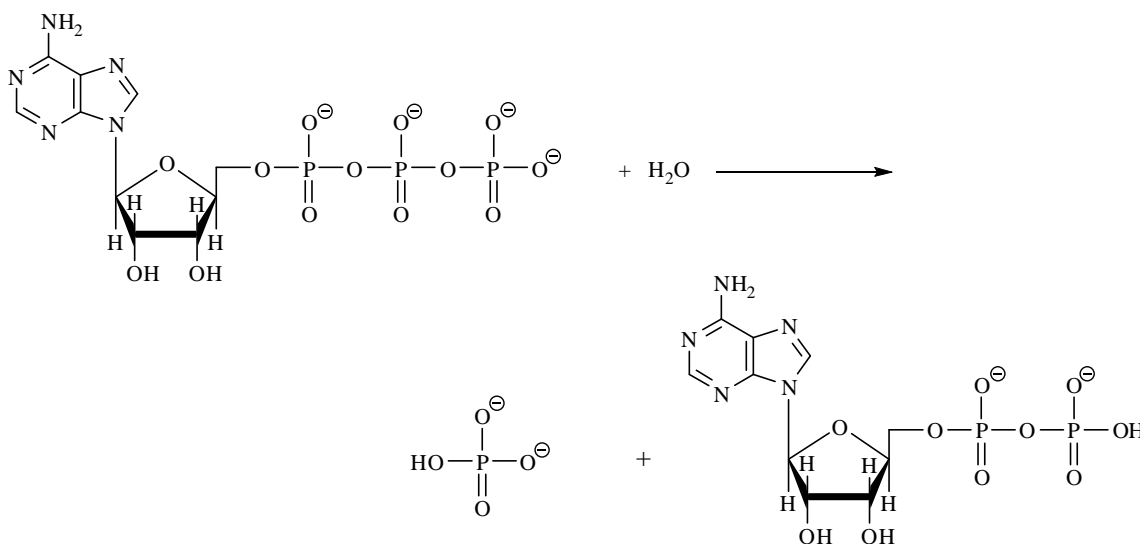
Marks
2

- Consider the σ -bond of a hydrogen molecule and the π -bond of ethylene ($\text{H}_2\text{C}=\text{CH}_2$). Sketch the shapes of the molecular orbitals of these bonds and the shapes of the atomic orbitals from which they arise.



- ATP is used as an energy source in the body. Hydrolysis releases ADP , HPO_4^{2-} and energy, according to the equation:

2



Suggest **two** reasons why this reaction is a good energy source.

There is an increase in resonance stabilisation energy when a free HPO_4^{2-} ion is produced.

ATP is a high energy molecule due to the 4 negative charges near each other. This is reduced when it's converted to ADP which has only 2 close negative charges.