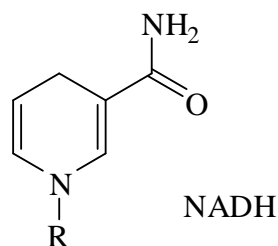
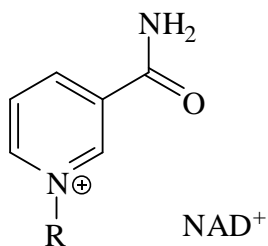


Marks
7

- NAD^+/NADH is a biological redox system. The two species may be represented by the structures below.



What are the requirements for a compound to be aromatic? Indicate which of NAD^+ and/or NADH fulfil these requirements.

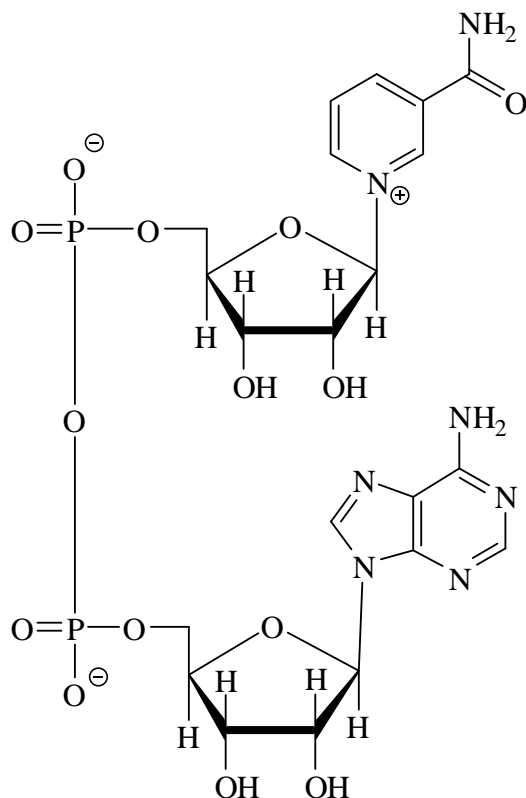
Which of NAD^+ and/or NADH will react with cold dilute H^+ in an acid/base reaction? Using the structures above, give the chemical equation for the reaction and a brief explanation for your choice.

Draw the structure of a tautomer of NADH .

THIS QUESTION CONTINUES ON THE NEXT PAGE

The full structure of NAD^+ contains ribose, two phosphate groups and adenine.

Marks
4



Draw ribose as a Fischer projection.

Blank space for drawing ribose as a Fischer projection.

Adenine is also a component of DNA used in forming complementary strands by hydrogen bonding. Indicate the sites of hydrogen bonding on adenine that are used in forming complementary strands in DNA and differentiate between those sites that are hydrogen bond donors and those that are hydrogen bond acceptors.

Blank space for indicating hydrogen bonding sites on adenine.