

Student 6: High Not Achieved

NZQA Intended for teacher use only

When fresh iron(II) sulfate solution is added to acidified potassium permanganate solution, a pale green solution and a purple solution react to form an orange solution.

Justify why this is an oxidation-reduction reaction. Your answer should include:

- Species linked to the provided observations
- An explanation of oxidation and reduction in terms of electron transfer or oxidation number change
- Balanced half and full equations

Answer:

The potassium permanganate is purple because the permanganate ion is purple. During the reaction purple permanganate ions changes to colourless manganese ions. (1)
When this change happens the permanganate ion gains 5 electrons and is reduced. (2)
Reduction occurs when there is a gain of electrons.

The pale green iron (ii) ion changes to the iron (iii) ion which is orange. (1) (3)