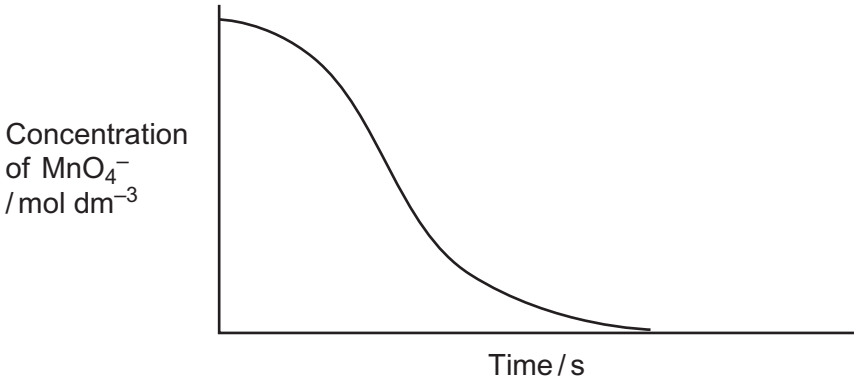
6 An acidified solution of potassium manganate(VII) was reacted with a sample of sodium ethanedioate at a constant temperature of 60 °C. The concentration of the manganate(VII) ions in the reaction mixture was determined at different times using a spectrometer to measure the light absorbed.

The following results were obtained.



6 (a) Write an equation for the reaction between manganate(VII) ions and ethanedioate ions in acidic solution.

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(2 marks)

(Extra space) .....

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6 (b) By considering the properties of the reactants and products, state why it is possible to use a spectrometer to measure the concentration of the manganate(VII) ions in this reaction mixture.

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(2 marks)

6 (c) This reaction is autocatalysed. Give the meaning of the term *autocatalyst*.
Explain how the above curve indicates clearly that the reaction is autocatalysed.

Meaning of *autocatalyst* .....

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Explanation .....

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(3 marks)

6 (d) Identify the autocatalyst in this reaction.

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(1 mark)

6 (e) Write **two** equations to show how the autocatalyst is involved in this reaction.

Equation 1 .....

Equation 2 .....

(2 marks)

10

Turn over for the next question