

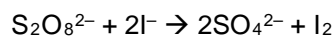


3. Draw fully labelled energy level diagrams for an exothermic reaction that is:
- Uncatalysed (5 marks)
  - Catalysed (2 marks)

4. Give one example of a reaction that is commonly carried out in the presence of a catalyst. Include a balanced symbol equation for the reaction. (3 marks)

5. State 3 other factors that affect the rate of a reaction. (3 marks)

6. The reaction between peroxodisulfate ions and iodide ions is very slow. The reaction may be catalysed by  $\text{Fe}^{2+}$  ions. The reaction produces iodine. Iodine is a brown colour in water and can be further visualised with starch which produces a blue/black colour when a certain amount of iodine is produced.



- Suggest why the reaction is very slow (1 mark)
- Outline an experiment which could be used to prove that  $\text{Fe}^{2+}$  ions catalyse the reaction (6 marks)

