Exam style questions, ages 14–16

***Education in Chemistry***November 2017[rsc.li/EiC617-catalysts-get-helping-hands](http://rsc.li/EiC617-catalysts-get-helping-hands)

These exam-style questions accompany the above article [‘Catalysis gets helping hands’](http://rsc.li/EiC417-medical-plastics).

1. Define the term ‘catalyst’ (2 marks)
2. Explain how a catalyst works (2 marks)
3. Draw fully labelled energy level diagrams for an exothermic reaction that is:
   1. Uncatalysed (5 marks)
   2. 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 Fe2+ 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.

S2O82– + 2I– 🡪 2SO42– + I2

* 1. Suggest why the reaction is very slow (1 mark)
  2. Outline an experiment which could be used to prove that Fe2+ ions catalyse the reaction (6 marks)