

Reaction Rates Questions

- 1 Food is preserved from decay by cooling. Answer these questions to explain how it works.
 - (a) Draw a labelled graph showing the distribution of molecular energy. Label this curve 'higher temperature'. Now draw the distribution for a lower temperature. Label this curve 'lower temperature'.
 - (b) Explain, referring to your graph in (a), why a decrease in temperature decreases reaction rate.
- 2 Catalytic converters are catalysts that help to break down harmful exhaust fumes.
 - (a) What is meant by activation energy?
 - (b) What is a catalyst?
 - (c) How do catalysts work?
- 3 The production of ammonia depends on reacting gaseous nitrogen and gaseous hydrogen.
 - (a) How does high pressure increase the reaction rate?
 - (b) Why is an iron catalyst added?
- 4 White phosphorus will spontaneously burn in air to make phosphorus oxide. Comment on the activation energy for this reaction. Explain your reasoning.
- 5 The reaction process of gaseous nitrogen with oxygen in the air is exothermic.
 - (a) Why is the atmosphere not on fire? Explain your reasoning.
 - (b) What could be done to help the nitrogen and oxygen in the air react?