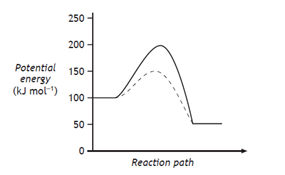
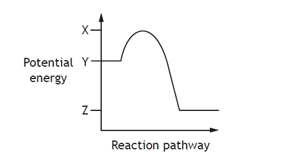
**Rates of Reaction Past Paper Questions**

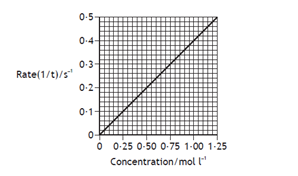
1. The diagram below shows the energy profile for a reaction carried out with and without a catalyst.  
     
   

What is the enthalpy change, in kJ mol-1, for the catalysed reaction?  
  
**A**  -100

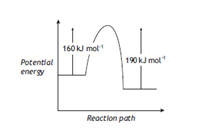
**B**  -50  
**C** +50  
**D** +100  
2016 CfE

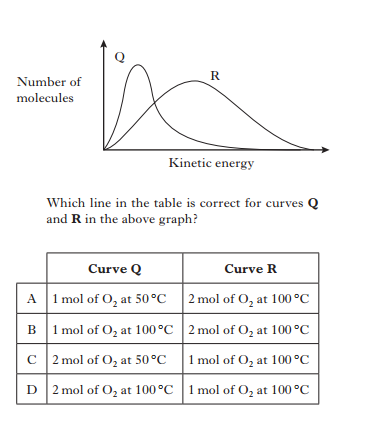
1. A reaction has the following potential energy diagram.  
     
     
   The activation energy for the forward reaction is:  
     
   **A**  X-Y  
   **B**  Y-X  
   **C** Y-Z  
   **D** Z-Y  
   2015 CfE,
2. In which of the following will **both** changes result in an increase in the rate of a chemical reaction?  
     
   **A** A decrease in the activation energy   
    and an increase in the frequency of   
    collisions.  
     
   **B** An increase in activation energy and   
    a decrease in particle size.  
     
   **C** An increase in temperature and an   
    increase in the particle size.  
     
   **D** An increase in concentration and a  
    decrease in the surface area of the  
    reactant particles.  
   Specimen CfE
3. Which of the following is **not** a correct statement about the effect of a catalyst?  
     
   **A** provides energy so that more   
    molecules have successful collisions.  
     
   **B** lowers the energy that molecules   
    need for successful collisions.  
     
   **C** provides an alternative route to the   
    products.  
     
   **D** forms bonds with reacting   
    molecules.

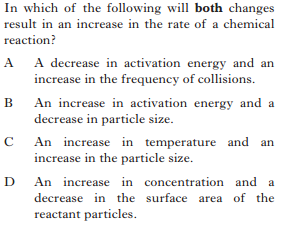
Specimen CfE

1. The graph shows how the rate of a reaction varies with the concentration of one of the reactants.  
     
   Calculate the reaction time, in seconds, when the concentration of the reactant was 0.5 mol l-1.  
     
   **A**  0.2  
   **B**  0.5  
   **C** 2.0  
   **D** 5.0

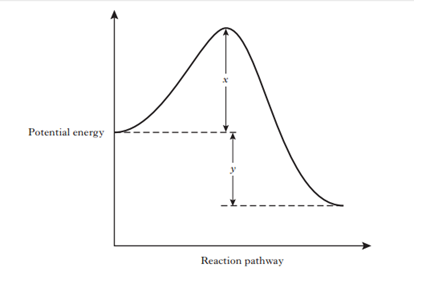
Specimen CfE

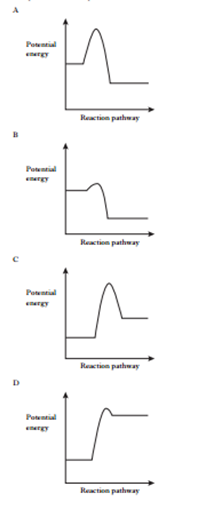
  
When a catalyst is used, the activation energy of the forward reaction is reduced to 35 kJ mol-1. What is the activation energy of the catalysed reverse reaction?  
  
**A**  30 kJ mol-1  
**B**  35 kJ mol-1  
**C** 65 kJ mol-1  
**D** 190 kJ mol-1  
Exemplar CfE

1. 

Rev H 2014  
  


Rev H 2013

1. Which of the following diagrams represents an exothermic reaction which is most likely to take place at room temperature?



Rev H 2013

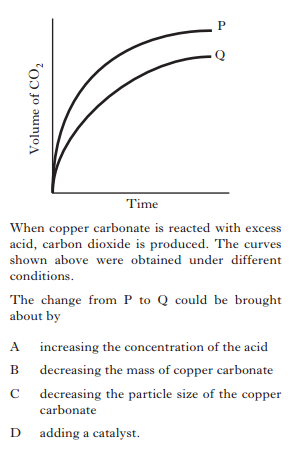
1. The enthalpy change for the forward reaction  
   can be represented by  
     
   **A** X  
   **B** Y  
   **C** X+Y  
   **D** X-Y

Rev H 2012

1. In a reaction involving gases, an increase in temperature results in  
     
   **A** an increase in energy.  
   **B** an increase in the enthalpy change.  
   **C** a decrease in the activation energy.  
   **D** more molecules per second forming   
    an activated complex.

Rev H 2012

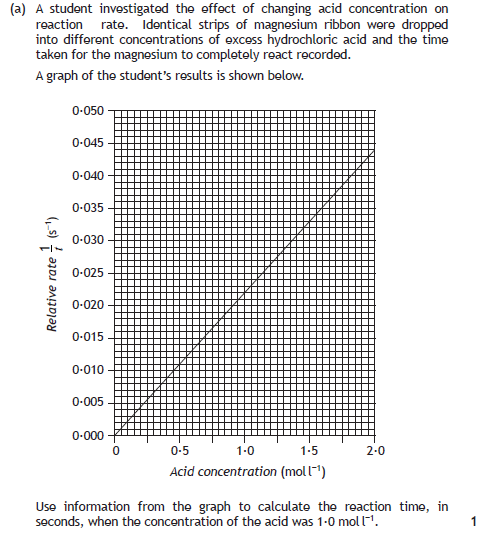
**11.**

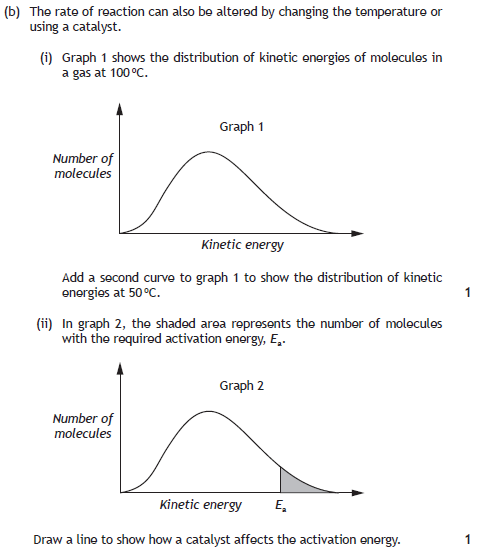
Rev H Specimen 

**12.**

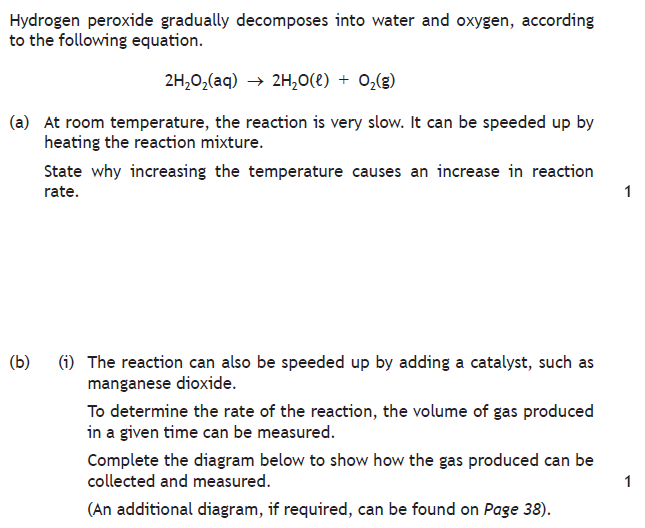
 Rev H Specimen

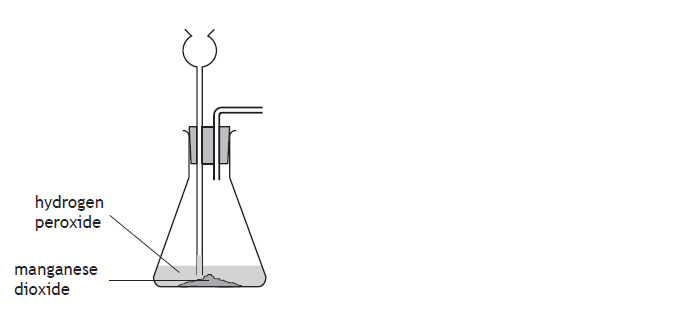
**Section B**

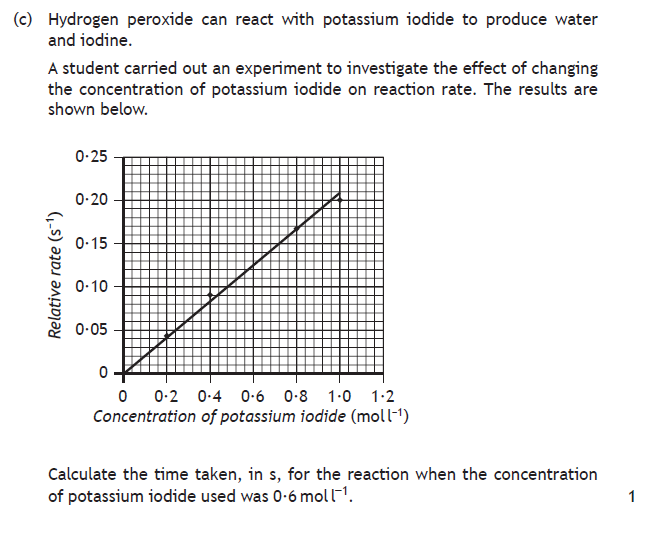
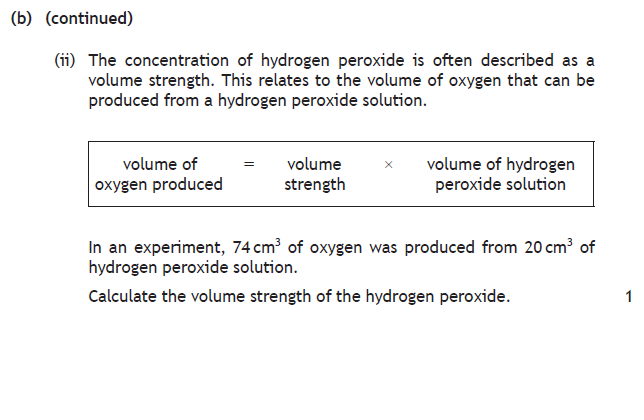
**1.**  


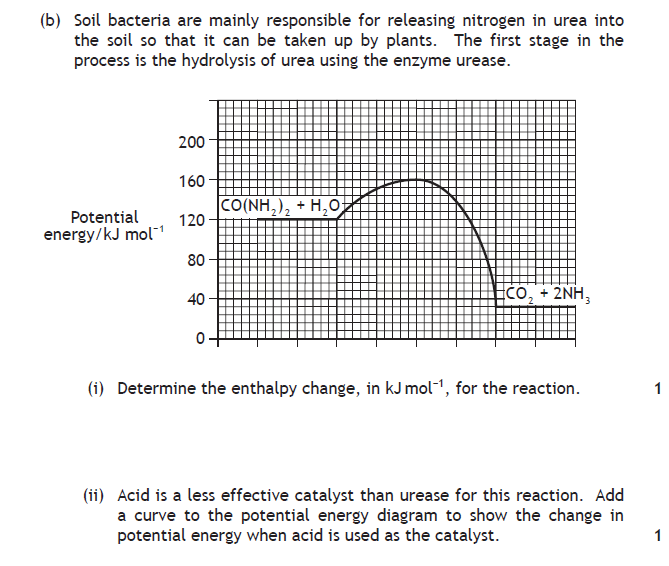


2015 CfE

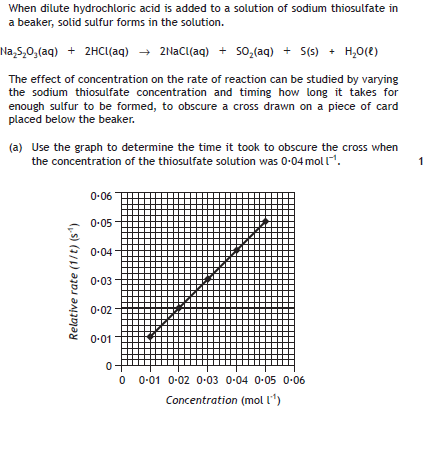
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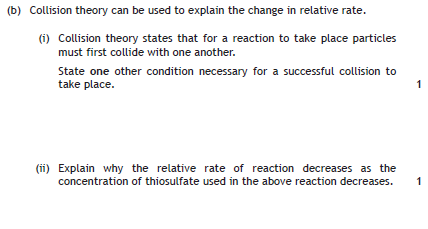


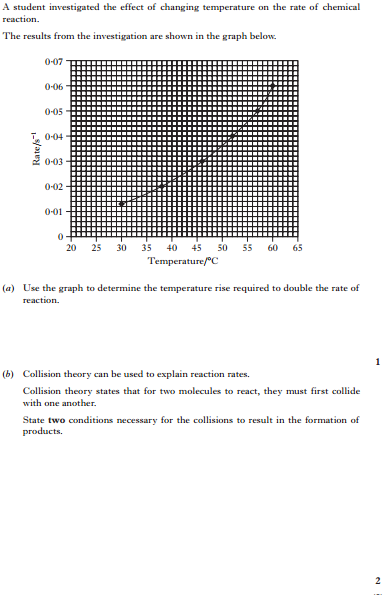
2016 CfE

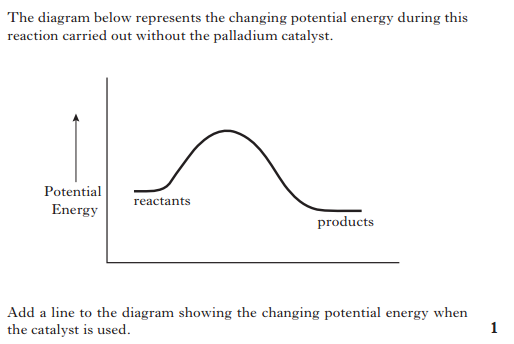
**3.**Specimen CfE

**4.**



Exemplar CfE

**5.**   
 Rev H 2014

**6.**  
  
Rev H Specimen