

8. Reaction kinetics

8.3 Catalysts

Paper 2

Marking Scheme

Q1.

(b)	<p>enthalpy</p> <p>reactants</p> <p>without catalyst</p> <p>with catalyst</p> <p>products</p> <p>progress of reaction</p> <p>uncatalysed hump</p> <p>catalysed hump lower than uncatalysed</p>	1
		1

Q2.

(c)(i)	value for the activation energy for the reaction A (no enzyme) compared to reaction B (with enzyme) value / range of values that are more (+) 29 kJ mol^{-1}	1
(c)(ii)	value for the enthalpy change for reaction A (no enzyme) compared to reaction B (with enzyme) -14 kJ mol^{-1}	1
(c)(iii)	<p>M1 show the energy of the reactants > products AND label ΔH using the predicted value given in (ii)</p> <p>M2 show activation energy 'hump' AND label using the value given in (i)</p> <p>energy / kJ mol^{-1}</p> <p>decrease + water</p> <p>glucose</p> <p>glucose + fructose</p> <p>progress of reaction</p>	2

Q3.

(a)(i)	(It is a substance that) speeds up a reaction	1
	(by creating an alternative pathway / mechanism with) lower E_a	1
(a)(ii)	(a heterogeneous catalyst is in a) different state / phase (to the reactants)	1

Q4.

(c)	1 = B	1
	2 = A	1
	3 = D	1