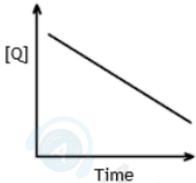


Question Number	Answer	Mark
3(a)	<p>The only correct answer is A ()</p>  <p><i>B is incorrect because the graph shows a reaction where the rate decreases as concentration of Q increases</i> <i>C is incorrect because the graph shown is correct when rate is plotted against concentration of Q</i> <i>D is incorrect because the graph shows a reaction where the rate increases as concentration of Q increases</i></p>	(1)

Question Number	Answer	Mark
3(b)	<p>The only correct answer is B (20s)</p> <p><i>A is incorrect because the half-life for a first order reaction is constant</i> <i>C is incorrect because the half-life for a first order reaction is constant</i> <i>D is incorrect because the half-life for a first order reaction is constant</i></p>	(1)

Section A

Question Number	Answer	Mark
1(a)	<p>The only correct answer is A (colorimetry)</p> <p><i>B is not correct because there is no change in mass</i> <i>C is not correct because titration is not a continuous monitoring method</i> <i>D is not correct because no gas is produced</i></p>	1

Question Number	Answer	Mark
1(b)	<p>The only correct answer is D ($\text{dm}^9 \text{mol}^{-3} \text{s}^{-1}$)</p> <p><i>A is not correct because these are the units of rate</i> <i>B is not correct because these are the units of the rate constant for a second order reaction</i> <i>C is not correct because these are the units of the rate constant for a third order reaction</i></p>	1

Question Number	Answer	Mark
1(c)	<p>The only correct answer is D (1/16)</p> <p><i>A is not correct because the rate would change by this factor for an overall first order reaction</i> <i>B is not correct because the rate would change by this factor for an overall second order reaction</i> <i>C is not correct because the rate would change by this factor for an overall third order reaction</i></p>	1

Question Number	Answer	Mark
15	<p>The only correct answer is B (132 minutes)</p> <p><i>A is incorrect because this is the time taken for the concentration to reach $5.5 \times 10^{-3} \text{mol dm}^{-3}$ which is half-way between the starting concentration and the final concentration</i> <i>C is incorrect because this is half of the time shown on the graph</i> <i>D is incorrect because this is the time at the end of the graphical data</i></p>	(1)

Question number	Answer	Mark
3	<p>The only correct answer is A (rate = $k[\text{E}][\text{F}]$)</p> <p><i>B is incorrect because the rate depends on concentrations of the reacting species in the slow step and the stoichiometry of this step</i> <i>C is incorrect because the rate equation cannot include intermediate concentrations</i> <i>D is incorrect because the rate depends on concentrations of the reacting species in the slow step and the stoichiometry of this step and the rate equation cannot include intermediate concentrations</i></p>	(1)

Question number	Answer	Mark
2	<p>The only correct answer is C (the time taken for the concentration of a reactant to halve)</p> <p><i>A is incorrect because the reaction is slower and slower as it progresses</i></p> <p><i>B is incorrect because the rate constant does not change at a given temperature</i></p> <p><i>D is incorrect because time taken for the concentration of a product to double will vary</i></p>	(1)

Question Number	Answer	Mark
2	<p>The only correct answer is D (0.125)</p> <p><i>A is incorrect because this is the amount that has decomposed after three half-lives</i></p> <p><i>B is incorrect because this is the concentration remaining after one half-life</i></p> <p><i>C is incorrect because this is the concentration remaining after two half-lives</i></p>	(1)