

Multiple Choice Answers

Q16: C

Multiple Choice Answers

Q16: A

Multiple Choice Answers

Q15: D

Multiple Choice Answers

Q15: B

Multiple Choice Answers

Q15: B

2(a)	M1 times are correct for all five experiments (20, 25, 42, 56, 95)
	M2 All times recorded in whole numbers of seconds only
2(b)	M1 y-axis scale is linear and points take up over half of space available
	M2 and M3 All points plotted correctly
	M4 best fit line
2(c)	M1 correct working shown at a concentration of 1.3 on graph
	M2 correct reading from their working shown on graph
2(d)(i)	M1 0.25
	M2 cm / s
2(d)(ii)	Experiment 5
2(e)	to check / verify / compare results / to get concordant results /
2(f)(i)	M1 both temperatures are correct (24.0, 46.5)
	M2 temperature change calculated correctly (22.5) and all temperatures and temperature change given to one dp
2(f)(ii)	a change of temperature will change the rate of reaction
2(f)(iii)	the polystyrene would prevent heat escaping
2(f)(iv)	use a water bath (at room temperature / at starting temperature)

2(a)	M1 volume of aqueous sodium thiosulfate and volume of water correctly recorded for all five experiments and volume of dilute hydrochloric acid shown as 5 cm ³ for all experiments.															
	<table><tr><td>50</td><td>0</td><td>5</td></tr><tr><td>40</td><td>10</td><td>5</td></tr><tr><td>30</td><td>20</td><td>5</td></tr><tr><td>25</td><td>25</td><td>5</td></tr><tr><td>20</td><td>30</td><td>5</td></tr></table>	50	0	5	40	10	5	30	20	5	25	25	5	20	30	5
	50	0	5													
	40	10	5													
30	20	5														
25	25	5														
20	30	5														
M2 all five stop clock reading correct																
<table><tr><td>30</td></tr><tr><td>37</td></tr><tr><td>49</td></tr><tr><td>59</td></tr><tr><td>73</td></tr></table>	30	37	49	59	73											
30																
37																
49																
59																
73																
	M3 all times in whole number of seconds only															
2(b)	M1 y-axis linear scale linear and points extend over more than half of the y-axis															
	M2 and M3 all points plotted correctly															
	M4 line of best fit															
2(c)(i)	correct evaluation of 1 ÷ time for experiment one. expected answer is 1 / 30 = 0.033															
2(c)(ii)	1															
2(d)(i)	M1 13															
	M2 cm ³															
2(d)(ii)	M1 correct working shown at 37 cm ³ on graph to show where value read															
	M2 correct reading from their working shown on graph.															
2(d)(iii)	so depth of liquid in beaker is the same in all experiments / so concentration of dilute hydrochloric acid in mixture is the same for all experiments															
2(e)(i)	a burette is more accurate than a measuring cylinder															
2(e)(ii)	Any one from: • volume of aqueous sodium thiosulfate is not 25 cm³ • volume of aqueous sodium thiosulfate is not constant / fixed • volumetric pipettes not available in those sizes															
2(f)	M1 (different size beaker would) change depth															
	M2 so changes time measured															

Multiple Choice Answers

Q19: A