

Multiple Choice Answers

Q12: C

Q13: B

Q14: A

Multiple Choice Answers

Q9: B

Q14: B

3(a)	one similarity ; e.g. substrate binds to active site enzyme-substrate complex forms product leaves active site interaction does not alter enzyme for re-use lower activation energy specific to one or very similar substrate(s) interaction can be affected by, action of inhibitors / pH / AW one difference ; e.g. induced-fit ora for lock-and-key active site not fully complementary to substrate change in, conformation / shape, of active site / AW <i>context of binding substrate or after product release</i> less specificity to substrate
3(b)(i)	orange / brown / amber ; A yellow-brown, yellow-orange
3(b)(ii)	<i>any three from:</i> phosphorylase (in extract) catalyses addition of glucose 1-phosphate to starch added to extract ; more starch is synthesised by phosphorylase as time progresses / AW ; iodine solution added to mixture turns a, blue / black / blue-black, colour (in the presence of starch) ; the more starch present in the mixture, the, darker / more intense, the, colour / shade ; the darker the colour (of the positive result) the less light passes through, mixture / sample ; the darker the colour / AW, the higher the absorbance (reading of the colorimeter) ;
3(b)(iii)	<i>ref. to</i> breakdown of starch catalysed by the enzyme / reaction in Fig. 3.1 goes in the opposite direction ; AVP ; e.g. <i>ref to</i> equilibrium shift <i>ref. to</i> glucose 1-phosphate has run out decrease in concentration of starch, qualified with <i>ref. to</i> iodine solution
3(c)	<i>any three from:</i> reduction in activity of phosphorylase (at all concentrations) ; ora higher throughout with caffeine V_{max} not reached ; <i>ref. to</i> plateau at a (much) lower activity ; calculated K_m value with caffeine is the same as without caffeine ; use of data from the graph to support conclusion ;

1(a)(i)	1 states 1%, 0.5%, 0.25% and 0.125% under the appropriate beaker ; 2 shows transfer of 10cm³ to each beaker from the previous beaker ; 3 shows 10 cm³ of W added to each beaker ;
1(a)(ii)	1 (heading for independent variable) concentration of H₂O₂ <u>and</u> % <u>and</u> to the left of the dependent variable ; 2 (heading for dependent variable) time / seconds ; 3 result for each concentration ; 4 expected pattern of results (the highest concentration has the shortest time) ; 5 results recorded to the nearest whole second ;
1(a)(iii)	the times for U1 , U2 and U3 recorded <u>and</u> seconds ;
1(a)(iv)	shows the three times added and divided by 3 ;
1(a)(v)	estimates the concentration of hydrogen peroxide in sample U according to results ;
1(a)(vi)	shows that there are no anomalies ;
1(a)(vii)	states that using smaller intervals between concentrations of hydrogen peroxide around the estimate would allow a more accurate estimate ;
1(b)(i)	1 x-axis: time / hours <u>and</u> y-axis: percentage of bacterial cells able to produce hydrogen peroxide ; 2 scale on x-axis: 40 to 2 cm, labelled at least every 2 cm <u>and</u> y-axis: 4 to 2 cm, labelled at least every 2 cm ; 3 correct plotting of points using small dots in circles or crosses ; 4 plots joined with thin line passing through all points ;
1(b)(ii)	1 percentage increases as time progresses (for both temperatures) ; 2 greater increase at lower temperature ;
1(b)(iii)	1 value estimated from graph ; 2 suitable line shown on the graph ;
1(b)(iv)	states one of these variables – species of bacteria / pH / nutrient status / oxygen ;