

BIOLOGY

9700/33

Paper 3 Advanced Practical Skills 1

October/November 2017

MARK SCHEME

Maximum Mark: 40

Published

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Question	Answer	Marks
1(a)(i)	regular intervals + at least 5 times ;	1
1(a)(ii)	top of arrow to appropriate height ; bottom of arrow to appropriate height ;	2
1(b)(i)	1 table drawn + heading pH ; 2 heading height of foam + mm ; 3 records results for at least three times + 5 pH values ; 4 height of foam recorded as whole millimetres ;	4
1(b)(ii)	shows maximum height of foam for pH 5 divided by time ; answer to the appropriate degree of accuracy ;	2
1(b)(iii)	decides whether temperature was a significant source of error ;	1
1(b)(iv)	states the height of foam for U ;	1

Question	Answer	Marks
1(b)(v)	estimates the correct pH using the result stated in (b)(iv) ;	1
1(b)(vi)	states at least five concentrations of hydrogen peroxide ; concentrations of hydrogen peroxide prepared by proportional dilution or serial dilution ; describes counting the number of bubbles or collecting the volume of oxygen using displacement of water or alternative correct method ;	3
1(c)(i)	1 (x-axis) temperature °C + (y-axis) rate of enzyme activity / arbitrary units ; 2 (scale on x-axis) 10.0 to 2 cm, labelled at least each 2 cm + (scale on y-axis) 10.0 to 2 cm, labelled at least each 2cm ; 3 correct plotting of five points with a small cross or dot in circle ; 4 five plots, joined plot to plot + thin line drawn ;	4
1(c)(ii)	correct reference to optimum temperature + 16°C ; as temperature increase more enzyme substrate complexes form or correct reference to kinetic energy ; after a specific temperature enzyme denatured ;	3

Question	Answer	Marks
2(a)(i)	1 plan diagram of appropriate size + no cells ; 2 correct section drawn ; 3 draws tissues in the part of the vascular ring below R ; 4 draws detail of tissues at the top of R correctly ; 5 draws tissues beneath the epidermis correctly ; 6 uses one label line + one label to identify the epidermis ;	6
2(a)(ii)	1 quality of line for outer wall of cells + cells of appropriate size ; 2 only four cells drawn, each cell of the group touching at least two of the other cells ; 3 cell walls drawn as two lines close together ; 4 a cell drawn with 5 sides or more ; 5 uses one label line + one label, C , to identify a structure made of cellulose ;	5

Question	Answer	Marks
2(b)(i)	correct measurement of line X ; records correct units ; correct answer shown to appropriate degree of accuracy ;	3
2(b)(ii)	states only observable differences ; any three observable differences of comparison ;; e.g. on J1 the vascular tissue is positioned in the shape of a ring while the vascular bundles in Fig. 2.2. are distributed throughout the stem	4