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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**

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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**

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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**

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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**

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