

BIOLOGY

9700/33 May/June 2016

Paper 3 (Advanced Practical Skills 1) MARK SCHEME Maximum Mark: 40

Published

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Mark scheme abbreviations:

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1 (a) (i)	<i>(risk assessment)</i> (hydrogen peroxide) harmful or irritant + medium or high ;		[1]
(b) (i)	<i>(measures room temperature)</i> whole number or to half a degree + °C ;		[1]
(ii)	(decides on interval for temperature) at least three additional temperatures + whole numbers + even interva °C ;	als ;	[2]
(iii)	 (recording results) 1. table drawn + heading, temperature + °C ; 2. heading, time + seconds ; 3. records results for at least five temperatures ; 4. correct pattern of results ; 5. times recorded as whole seconds ; 6. records results for repeats + means calculated ; 		[6]
(iv)			[2]
(v)	<i>(conclusions)</i> (as temperature increases, activity increases) more successful collision more enzyme-substrate-complexes/ESCs ; (decreased/no activity) denatures or changed shape of active site ;	ons or	[2]
(vi)	 (modification to investigate another variable) 1. (to standardise temperature) stated temperature + thermostatically controlled water-bath ; 2. (independent variable) at least five concentrations of catalase ; 3. (method) simple dilution/proportional dilution/serial dilution ; 		[3]
(c) (ch 1. 2. 3. 4.	art) (x-axis) different plant species + (y-axis) initial rate of activity of catala s ⁻¹ ; (scale on x-axis) even width of bars + (scale on y-axis) 0.05 to 2 cm, la at least each 2 cm; correct plotting of five bars; five bars labelled with each horizontal line drawn as a thin line + each column labelled;	abelled	[4] [Total: 21]

Ρ	age 4	1	Mark Scheme	Syllabus	Paper
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2	(a)	(i)	 (plan diagram) 1. plan diagram of appropriate size + no shading ; 2. no cells + at least two vascular bundles + correct section drawn 3. epidermis drawn as two lines drawn closely together ; 4. line drawn to show area of cells located at tip of leaf ; 	;	[4]
		(ii)	 (drawing) 1. quality of line for outer wall of cells + size at least 50 mm across cell; 2. only four cells drawn, each cell touching at least one other cell; 3. cell walls drawn as two lines close together; 4. one cell which shows a difference from other cells; e.g. cell contains an inclusion 5. uses one label line + one label to cell wall; 	largest	[5]
	(b)	(i)	 (ratio) 1. measures depth of midrib + diameter of the vascular bundle; 2. records whole numbers or to 0.5 for both measurements; 3. decides to use same units for both measurements; 4. displays, in final ratio, larger number to smaller number; 5. final answer as simplest ratio; 		[5]
		(ii)	(conclusion)		
	 (habitat) water + (feature) large air spaces or more air spaces or AVP; (c) (observable difference between leaf on K1 and leaf in Fig. 2.2) organises comparisons into three columns with one column for features, one 			[1]	
		headed K1 and one headed Fig. 2.2 ; any three observable differences of comparison ;;; e.g. K1 has more vascular bundles than Fig. 2.2			[4]
					[Total: 19]