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Cambridge Ordinary Level

MARK SCHEME for the October/November 2015 series

5090 BIOLOGY

5090/32 Paper 3 (Practical Test), maximum raw mark 40

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Mark schemes will use these abbreviations:

;	separates marking points
/	alternatives
()	contents of brackets are not required but should be implied
R	reject
A	accept (for answers correctly cued by the question, or guidance for examiners)
I	ignore (for incorrect but irrelevant responses)
AW	alternative wording (where responses vary more than usual)
AVP	alternative valid point (where a greater than usual variety of responses is expected)
ORA	or reverse argument
underline	actual word underlined must be used by candidate (grammatical variants excepted)
max	indicates the maximum number of marks that can be given
+	statements on both sides of the + are needed for that mark

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Question	Expected answers	Additional guidance	Marks
1 (a)	50 : 50 ;	Answer added to Table 1.1	[1]
(b) (i)	measurements of potato lengths in **A, B, C, D** and **E** recorded in Table 1.2 ;	1 mark max if incorrect units given	[2]
(ii)	calculating change in length from original 60 mm ;	5 correct calculations: 2 marks 4 correct calculations: 1 mark 3 or fewer correct calculations : 0 marks minus signs / decrease: 1 mark where appropriate	[3]
(iii)	1. x axis labelled 'concentration of fruit juice / %' + 'mm' added on y axis ; 2. linear scales with numerical values + negative values on y-axis ; 3. line / plots to use at least half grid on both axes ; 4. 5 plots correct + visible ; 5. plots joined with ruled lines / smooth curve through all plotted points ;		[5]
(iv)	movement of <u>water</u> ; <u>osmosis</u> ; partially permeable membrane ; uptake of water qualified against results ; loss of water qualified against results ;	**A** no change = no water movement qualified against results	[5]

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Question	Expected answers	Additional guidance	Marks
(c)	leave potatoes for longer time (more than 20 min) / in solution for the same length of time **;** repeat / replicate / larger numbers of strips + calculate mean / average **;** strips taken from same (type of / species) potato / **AW ;** strips should be of same thickness / surface area / cross-sectional area **;** use smaller increments for fruit juice concentrations **;**		[max 3]
			[19]

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Question	Expected answers	Additional guidance	Marks
2 (a) (i)	1. clear, clean continuous outline ; 2. at least 100 mm total length + green area clearly outlined ; 3. at least part of midrib drawn with double line + not ruled + 8 veins ; 4. labels: 2 correct from lamina / petiole (leaf stalk) / midrib (main vein) / vein ;		[4]
(ii)	leaf in hot water / boiled in water ; in ethanol / alcohol ; to remove chlorophyll ; in water (to soften / remove alcohol) ; add iodine (solution) ; no naked flames / turn off or don't use Bunsen burner ;	**A** decolourise leaf 1 mark awarded for safety point	[3] [1] [max 4]
(iii)	*green:* blue – black / black ; *white:* yellow / brown / yellow-brown ;		[2]
(b) (i)	14–17 ;		[1]

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Question	Expected answers	Additional guidance	Marks
(ii)	22 – 24 + mm ; divided by 500 ; length ;	**A** 2.2 – 2.4 + cm	[3]
			[14]

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Question	Expected answers	Additional guidance	Marks
3 (a) (i)	small / narrow diameter / lumen ; folded / wrinkled inner layer / layered ; thick(ness of) wall / thicker wall than capillaries ;		[max 2]
(ii)	alveolus / alveoli / air sac ;		[1]
(b) (i)	*max 2 from:* thin walls / one cell thick ; many capillaries / network of capillaries ; many alveoli ; *max 1 from:* good blood supply / artery to transport blood ; reference to large surface area / diffusion	**R** gas exchange (stated in the question)	[max 3]
(ii)	reference to fewer / large alveoli (in **B**) / **ORA** ; thicker walls (in **B**) / **ORA** ;	**A** larger lumen in **B** **A** fewer capillaries in **B** / **ORA**	[max 1]
			[7]
		Total:	**[40]**

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