Cambridge International AS & A Level

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BIOLOGY **9700/34**

Paper 34 (Advanced Practical Skills 2) **May/June 2017**

MARK SCHEME

Maximum Mark: 40

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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Mark scheme abbreviations

;	separates marking points
/	alternative answers for the same point
R	reject
A	accept (for answers correctly cued by the question, or by extra guidance)
AW	alternative wording (where responses vary more than usual)
underline	actual word given must be used by candidate (grammatical variants accepted)
max	indicates the maximum number of marks that can be given
ora	or reverse argument
mp	marking point (with relevant number)
ecf	error carried forward
I	ignore

Question	Answer	Marks
1(a)(i)	1 at least 4 more concentrations **;** 2 correct volumes of **10M ;** 3 volumes of **10M** and **W** add up to 10 **;**	**3**
1(a)(ii)	1 table drawn **+** heading, percentage / % conc(entration) **+** (molecule) **M ;** 2 heading, time **+** s **;** 3 records, times for at least 4 concentrations **;** 4 correct trend in results **;** 5 (for times) whole numbers only **;**	**5**
1(a)(iii)	records as whole number **+** correct unit **;**	**1**
1(a)(iv)	correct estimate for their results **+** % **;**	**1**
1(a)(v)	1 more / wider / narrower range of concentrations **or** named examples **;** 2 concentrations between named concentrations **or** within range they have stated in and **(a)(ii)** and **(a)(iv) ;** 3 draw graph **+** explain how to read off graph **;**	**3**
1(b)(i)	1 (*x*-axis) concentration of solution of molecule **M** (/) μg cm^{-3} **+** (*y*-axis) inhibition area (/) mm^2 **;** 2 (scale for *x*-axis) : 20 to 2 cm, labelled each 2 cm **+** (scale for *y*-axis) 20 to 2 cm, labelled each 2 cm **;** 3 correct plotting of 6 points **;** 4 6 plots joined point to point drawn as a ruled thin line **;**	**4**

Question	Answer	Marks
1(b)(ii)	correct estimate **+** mm^2 using candidates graph **;**	**1**
1(b)(iii)	bacteria has not, multiplied / grown **or** bacteria, killed / destroyed **;**	**1**
1(b)(iv)	*max 2* 1 correct reference to cell, wall / membrane **;** 2 cell / bacterial lysis **or** cells / bacteria burst **;** 3 *idea of* inhibition of transcription / translation / protein synthesis **;** 4 *idea of* inhibition of cell division **;** 5 acts as an enzyme inhibitor **;** 6 *idea of* inhibiting DNA replication / synthesis **;**	**2**
	Total:	**21**

Question	Answer	Marks
2(a)(i)	1 states 4 measurements (**T**, **L1**, **P**, **Q** and **L2**) **;** 2 **L1** and **L2** have to be smaller values than **P** and **Q** **;** 3 measurement of **T** = sum of other measurements **;**	**3**
2(a)(ii)	1 uses measurements of epg units **T + P** or **Q** (whichever is smaller) **;** 2 Larger number to smaller number **;** 3 To lowest common denominator **;**	**3**
2(a)(iii)	1 minimum size at least 90 mm **+** at least 3 lines **+** no shading **;** 2 No cells **+** at least one vascular bundle **+** correct section drawn **;** 3 correct proportion of palisade to whole depth of leaf **;** 4 epidermis drawn as two lines **+** one epidermis thinner than the other **;** 5 uses one label line **+** one label to the palisade layer **;**	**5**
2(a)(iv)	1 quality of line for outer wall of cells (thin line) **+** minimum size at least 40 mm across largest cell **+** no shading **;** 2 **only** four cells drawn in a line, each cell touching at least one other cell **;** 3 cell wall drawn as two lines close together **;** 4 shows inclusion in at least one cell **or** cells drawn with convex walls **;** 5 uses one label line **+** one label to cell wall **;**	**5**

Question	Answer	Marks
2(b)	*max 3* any 3 correct differences annotated on Fig 2.3 **;;;**	**3**
	Total:	**19**