



Cambridge International Examinations

Cambridge International Advanced Subsidiary and Advanced Level

BIOLOGY 9700/32

Paper 3 (Advanced Practical Skills 2)

May/June 2016

MARK SCHEME
Maximum Mark: 40

Published

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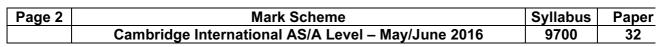
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Mark scheme abbreviations:

; separates marking points

I 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)

<u>underline</u> actual word given must be used by candidate (grammatical variants accepted)

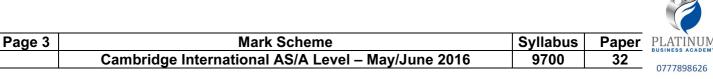
max indicates the maximum number of marks that can be given

ora or reverse argument

mp marking point (with relevant number)

ecf error carried forward

I ignore





(a) (i)	(measures room temperature) whole number or to half a degree + °C ;	[1]
(ii)	(decides on intervals for temperatures) at least three additional temperatures + whole numbers + at even intervals + °C;	[1]
(iii)	 (recording results) 1. table drawn + heading, temperature + °C; 2. heading, height or length (of foam) + mm; 3. records results for at least four temperatures; 4. correct pattern of results; 5. height or length (of foam) recorded as whole mm; 	[5]
(iv)	(sources of error with reason) appropriate error with reason; e.g. difficulty of maintaining temperature within acceptable range appropriate error with reason; e.g. difficulty of measuring foam as not even layer in test tube	[2]
(v)	(decides on control) boils yeast suspension or replaces yeast cell suspension with same volume of water;	[1]
(vi)	(conclusion) (as temperature increases) ref. to more kinetic energy; more successful collisions or more enzyme-substrate-complexes/ESCs formed;	[2]
(vii)	 (modification to investigate another variable) 1. (to standardise temperature) stated temperature + thermostatically controlled water-bath; 2. (independent variable) at least five pHs; 3. (method) ref. to use of buffers; 	[3]
(b) (i)		[4]
(ii)	(interpretation) correctly reads from graph the volume of CO ₂ at 3.5%;	[1]

[Total: 20]

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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. vascular bundle divided into at least two regions;
- 4. depth of one vascular bundle drawn in correct proportion to width of lamina;
- 5. uses one label line + one label to xylem;

[5]

(ii) (drawing)

- 1. quality of line for outer wall of cells + size at least 40 mm across largest cell;
- 2. only four cells drawn, each cell touching at least one other cell;
- 3. cell walls drawn as two lines close together;
- 4. cells in a chain form part of a circle;
- 5. uses one label line + one label to cell wall;

[5]

(b) (calculation)

- 1. *collects* number of eyepiece gratitude units equal to the length of the vascular bundle;
- 2. records whole numbers for eyepiece graticule units;
- 3. shows multiplication of numbers for eyepiece graticule units by $29.5 \,\mu m$;
- 4. answer shown to appropriate accuracy + μm;

[4]

(c) (i) (observable differences between the leaf on **M1** and the leaf in **Fig. 2.2**) organises comparison into three columns with one column for features, one headed **M1** and one headed **Fig. 2.2**;

any three observable differences of comparison ;;;

e.g. M1 has more vascular bundles than Fig. 2.2

[4]

(ii) (conclusion)

(feature) thick cuticle or sunken stomata or few stomata; (explanation) reduces evaporation or reduces transpiration;

[2]

[Total: 20]