UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Level and GCE Advanced Subsidiary Level

MARK SCHEME for the May/June 2006 question paper

9700 BIOLOGY

9700/05 Paper 5

Maximum mark 30

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which Examiners were initially instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

The minimum marks in these components needed for various grades were previously published with these mark schemes, but are now instead included in the Report on the Examination for this session.

- CIE will not enter into discussion or correspondence in connection with these mark schemes.

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Question	Expected Answers	Marks	Additional Guidance
1 (a)	Table headed time and units;	**1**	
	Table headed distance and units;	**1**	
	Table headed mean;	**1**	
	Mean calculated correctly;	**1**	
(b) (i)	(8 /10) x 1.8 = 1.44 mm^3 min^{-1};	**1**	
(ii)	0.2 in 1 min;	**1**	Accept other valid ways of doing this
	(8 / 10) x 0.2 = 0.16;	**1**	
	1.44 + 0.16 = 1.6 mm^3 min^{-1};	**1**	
(iii)	1.6 / 1.44 = 1.1;	**1**	
(c)	changes in pressure OR temperature controlled;	**1**	
(d) (i)	CO_2 limiting at low CO_2 concentrations;		Accept reverse arguments
	Other factor limiting at high CO_2 concentrations;		
	e.g. light / temperature / conc chlorophyll / enzyme conc;		
	Bicarb is a source of CO_2;	**3 max**	
(ii)	CO_2 in solution;		O_2 less soluble than CO_2 = 2 marks
	Oxygen gas given off;	**2**	
		Total 15	
2 (a)	Quality of drawing;		No labels needed
	Two vascular bundles;		
	D shaped section;		
	Ratio of total width of conductive tissue to stem between 1:4 and 1:2;		
	Resin canals;		
	Thick / 2 lines for cuticle;		
	Endodermis around vascular bundles;		
	Gaps in epidermis for stomata;	**6 max**	
(b)	Measured drawing and specimen;	**1**	
	Drawing / specimen and calculation correct;	**1**	
(c)	sub stomatal air chamber;		
	sunken stomata;		
	arching over cuticle;		
	thick walled epidermis;		
	1 mark for appropriate annotation;	**5 max**	
(d)	Two from:		
	Large volume to small surface area ratio;		
	Thick walled epidermis;		
	Leaf compact inside / few air spaces;		
	Thick cuticle;		
	Hypodermis / sclerenchyma below epidermis;	**2 max**	
		Total 15	

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