

**JUNE 2002**

**GCE Advanced Level**

**MARK SCHEME**

**MAXIMUM MARK : 30**

**SYLLABUS/COMPONENT :9700 /5**

**BIOLOGY  
(PRACTICAL)**



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Qn	G	Expected Answers	Marks	Additional Guidance
1 a i		Any two from: No cells or tissue, 5 single lines, correct orientation, no mid rib; Spongy layer > palisade layer; Palisade layer > either epidermal layers.	max 2	Labels required
		Any two from: Epidermis correctly labelled; Stomata correctly labelled; Palisade correctly labelled; Spongy (mesophyll) correctly labelled;	max 2	
1 a ii		Any two from: 3 cells only; Irregular packing, not 'bricks in wall'; Height > width;	max 2	
		Any two from: Chloroplasts; Cell walls; Nucleus;	max 2	
1 b i		Any eight from: Sunken stomata; Reduces diffusion rate / trap water vapour;  Hairs; Reduces diffusion rate / trap water vapour;  (Thick) cuticle; Reduces evaporation / transpiration;  Curled leaf / inner foldings; Reduces external surface area / reduces diffusion rate / trap water vapour;  Sclerenchyma; Reduces water loss / reduces evaporation;	max 8	1 mark for each feature and 1 for function.  OWTTE Reject reduces water loss
1 b ii		Less surface area to absorb light / CO <sub>2</sub>	1	
			<b>Total</b>	<b>17</b>
2 a		Any 7 from: Place end of pond-weed under gas chamber; Open screw clip; Draw up water with syringe; Water in capillary; Set lamp at measured distance; Add sodium hydrogen carbonate / aerate; Leave to stabilise; Time; Draw up gas; Measure gas; Move lamp; Repeat procedure	max 7	Reject fill syringe with water and push.  Mark 2(a) as a whole.
2 b		Any two from: temperature (of water); same pond-weed; carbon dioxide conc; PH; Time	max 2	

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2 c	<p>Any four from:  As light increases so does gas production;  <math>\frac{1}{2}</math> distance = 4 X rate;  ref to numbers on table;  <math>\frac{1}{2}</math> distance = 4 X light intensity;  Ref. to limiting factor (closer than 20cm);  Correct example of limiting factor.</p>	<p>max 4  <b>13</b></p>	
	<b>Total</b>		