

## **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.

CIE is publishing the mark schemes for the May/June 2006 question papers for most IGCSE and GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.



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|               | <b>GCE A/AS LEVEL – May/June 2006</b> | <b>9700</b>     | <b>05</b>    |

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