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**UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS**

GCE A/AS Level

# MARK SCHEME for the November 2005 question paper

## 9700 BIOLOGY

**9700/05** **Paper 5** **maximum raw 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.

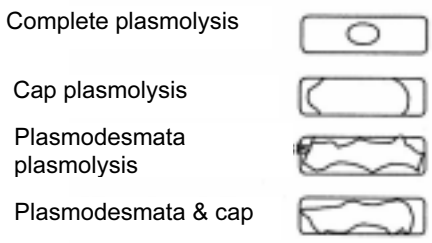
Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

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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| Qn | Expected Answers | Mark | Additional Guidance |
|---|---|---|---|
| 1 (a) (i) | Three cells and length = 1 ½ - 5 x the width;<br>Cell walls clear single lines or 2 lines close together; | 1<br>1 | Some cells almost square |
| (ii) | Cytoplasm complete;<br>turgid; | 1<br>1 | **Accept** pigmented |
| (b) (i) | Evidence of plasmolysis;<br><br> | 3 max | |
| (ii) | Ref to osmosis;<br>Solution A has lower water potential than cell sap;<br>Water moves from high water potential to low water potential/down water gradient;<br>Through selectively permeable membrane; | 1<br>1<br><br>1<br>1 | **Accept** correct ref to solute potential.<br><br>i.e correct reason for movement of water |
| (c) | Idea that cell contents destroyed/ disorganised/crystalised/leaked out/brownish; | 1 | |
| (d) | Idea that cells gradually/over time/become;<br>turgid; | 1<br>1 | |
| (e) | Idea that cells do not change/permanent damage; | 1 | |
| (f) | Idea that A is reversible/B is not;<br>Correct ref to cell membrane; | | |
| | **Total** | **17** | |

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| | | | |
|---|---|---|---|
| **2 (a) (i)** | 1 (late) anaphase/(early) telophase<br>2 prophase<br>3 interphase<br>4 metaphase<br>5 (early/mid) anaphase | <br><br><br><br>2 max | 5 = 2 marks<br>4 = 1 mark |
| **(ii)** | 3 above 2 and 2 above 4;<br>4 above 5 and 5 above 1; | 1<br>1 | **accept**<br>2 above 4 and 4 above 5<br>5 above 1 and 1 above 3 |
| **(iii)** | Any four from:<br>Metaphase shown;<br>3 correct labels;<br>distinct chromosomes visible;<br>parts of chromosome on either side of plate;<br>chromosomes fatter than thickness of cell wall; | <br><br><br><br><br>4 | <br><br>**Ignore** cell membrane<br>Text book diagram max 1 |
| **(b)** | Any three from:<br>Chromosomes on equator/plate/middle;<br>Beginning to pull apart;<br>Idea of chiasma;<br>Homologous pairs;<br>Thick; | <br><br><br><br><br>3 max | |
| **(c)** | Two from:<br>LS all arranged same way OWTTE;<br>Chromosomes in homologous pairs in meiosis ORA;<br>Crossing over;<br>Root cells show mitosis; | <br><br><br><br>2 max | **Accept** parent cell rounded shape in meiotic photo ORA |
| | **Total** | **13** | |

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