

MARK SCHEME for the November 2005 question paper

5090 BIOLOGY

5090/03

Paper 3 maximum raw mark 40

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*.

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

CIE is publishing the mark schemes for the November 2005 question papers for most IGCSE and GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses



| Page 1 | Mark Scheme | Syllabus | Paper |
|--------|-----------------------------|----------|-------|
| | GCE O Level – November 2005 | 5090 | 3 |

1 (a) Drawing marks: [D.3]

- 1 Clear, clean realistic drawing, 5 cm or more, with basal disc.
- 2 Fleshy scale leaves accurately shown and attached.
- 3 Papery covering scales shown

Labels: Any 2 of: leaf/**scale**/bud/stem/disc; [for 1]

(b) (i) Up to three from:

both are roots;
transverse sections;
central conducting tissue;
surrounded by storage tissue;
AVP;

[up to 3]

(ii) Expect a comparison/contrast to be made

[1 mark per line]

| | |
|--------------------------|-----------------------------|
| specimen in Fig.1.1 | cut surface of W2; |
| cellular structure clear | no cells visible; |
| vegetative organ AW | storage tissue/organ; |
| cells almost empty | full of starch/stored food; |

[up to 2]

(c) (i) black due to starch;
central pattern;
detail of distribution;
ref. time, or development of reaction;

[up to 3]

(ii) Test: Heat/boil with Benedict's; how heated;
obs: orange/reddish (ppt);
A: green if ref dilute concn.
concl: ref. (amount of) R.S/glucose present;

[4]

(iii) cutting open cells;
increased surface area;
releasing contents/sugar;
decanting gets rid of (masking) colour AW;

[up to 2]

[Total:18]

| Page 2 | Mark Scheme | Syllabus | Paper |
|--------|-----------------------------|----------|-------|
| | GCE O Level – November 2005 | 5090 | 3 |

2 (a) (i) Drawing marks; [D.2]

- 1 **Ruled** rectangle and square, in proportion.
- 2 Specimen well placed.

Labels: slide, cover glass, specimen, water; [2]

[3 correct = 2 marks 2 correct = 1 mark]

(ii) Two from:

air bubbles avoided;
 central placement;
 no overflow of water; [2]

(b) Filter paper soaks up water;
 stain penetrates/drawn under cover;
 stain emerges on f paper/replaces water;
 specimen becomes stained;
 ref. development with time; [up to 4]

(c) (i) Drawing marks: [D.3]

- 1 At least 6 cm clear and clean.
- 2 Large and small/simple leaves observed.
- 3 Leaf arrangement accurately shown.

Labels: stem; leaves; [2]

(ii) Line ruled and accurately measured with units once;
 expression line length over specimen size;
 correctly calculated and recorded; [3]

(iii) Four from:

specimen supported;
 for examination with microscope;
 clear for viewing/no fingers in the way AW;
 specimen flat/thin;
 ref. ease of focusing;
 AVP; [such as ref. penetration of light/ref. visibility of staining] [4]

[Total: 22]