

**UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS**

General Certificate of Education O Level

**MARK SCHEME for the June 2005 question paper**

**5090 BIOLOGY**

**5090/06**

**Paper 6 (Alternative to Practical), maximum 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.

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**JUNE 2005**

**GCE O Level**

**MARK SCHEME**

**MAXIMUM MARK: 40**

**SYLLABUS/COMPONENT: 5090/06**

**BIOLOGY**

**Paper 6 (Alternative to Practical)**



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- 1 (a) (i) 150 - 280; mm; (or equivalent cm.) [2]
- (ii) image of that part of field of view for one blind spot;  
falls on receptors of other eye;  
blind spots do not coincide;  
brain 'fills' the blank; A.W. [up to 2]  
ignore ref. stereoscopic
- (b) (i) iris correct;  
pupil correct; (allow 1 if both correct on adjacent drawing) [2]
- (ii) outer iris diameter same in both drawings;  
pupil smaller in second drawing; [2]  
R: sections
- (iii) retina detects more light entering eye;  
causing dazzle ref. somewhere;  
ref. iris involvement  
circular muscles (of iris) contract;  
radial muscles relax; (allow 1 if both mentioned but confused)  
smaller pupil;  
ref. reflex/role of brain;  
controls entry of light; [up to 6]  
A: correct muscle function enlarging or constricting pupil

[Total: 14]

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- 2 (a) (i)** blood; [1]
- (ii)&(iii)** together. Drawing marks: [D.4]
- 1** Cells at least 2 cm clear, clean, realistic
  - 2** Two cells drawn in each correct space, round and oval
  - 3** Central area shown pale **(ii)**
  - 4** Nuclei realistic **(iii)**
- Labels: In 2.1 - two from: [1]  
cytoplasm; depression/pale area; plasma/cell/outer membrane; (blood)  
plasma;
- In 2.2 - nucleus and  
one of cytoplasm/cell/outer membrane; [1]
- R: one of label marks if cell wall mentioned  
[Up to 3 max of above marks if drawings transposed]
- (b)** For each of 2 contrasting pairs:  
small(er) - large(er);  
no nucleus - nucleus present;  
pale stain/cytoplasm - darker;  
human – non-human  
10/more cells – 3/fewer cells;  
round - oval; [2]  
Two from: cytoplasm; cell membrane; rounded/regular;  
both are animal cells; [2]
- [Total: 11]**

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- 3 (a) (i)** lengths: 50.5; 47.5;  
changes: +0.5; -2.5; **[4]**
- (ii)** Table 3.2.  

1.0	S3
0.8	S2
0.6	S5
0.4	S1
0.2	S4

**[All correct = 4]**  
[S2 below S3; S5 below S2; S1 below S5; S4 below S1]
- (b)** Two from: keep s/a of chips the same;  
use more chips; use longer chips;  
all from same potato/to eliminate variation;  
equal/constant temperature;  
repeat/replicate; use other soln. concs;  
measure mass/weight;  
repeat measures to constant values  
cover to reduce evaporation (of solvent);  
o.v.p. **[2]**
- (c) (i)** \*1 x axis labelled 'conc/mol dm<sup>3</sup>'  
\*2 y axis labelled 'change in length/mm'  
3 all plots clear and correct  
4 curve well drawn and smooth **[4]**  
\* allow on bar graph
- (ii)** 0.35 (0.325 - 0.375) mol/dm<sup>3</sup>; (max 3 decimal pts) **[1]**

**[Total: 15]**