MARK SCHEME for the June 2005 question paper

5090 BIOLOGY

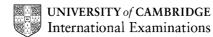**5090/06   Paper 6 (Alternative to Practical), maximum mark 40**

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GCE O Level

MARK SCHEME

MAXIMUM MARK: 40

SYLLABUS/COMPONENT: 5090/06

BIOLOGY
Paper 6 (Alternative to Practical)

UNIVERSITY *of* CAMBRIDGE
International Examinations

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) <u>retina</u> detects more light entering eye;
causing <u>dazzle</u> ref. somewhere;
ref. <u>iris</u> involvement
<u>circular</u> muscles (of iris) contract;
<u>radial</u> 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]

2 **(a)** **(i)** <u>blood</u>;   **[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 - <u>nucleus</u> 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]

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^3'
    *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^3; (max 3 decimal pts) **[1]**

[Total: 15]