UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2009 question paper

for the guidance of teachers

0610 BIOLOGY

0610/06 Paper 6 (Alternative to Practical), maximum raw mark 40

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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

CIE is publishing the mark schemes for the May/June 2009 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

1 (a) Drawing:
O outline; (all drawing lines unbroken and no shading)
N correct number of cloves; (9/10 + 4)
A detail of central area shown in cloves of correct proportion;

If 1.1a drawn – max 1 for **O** outline
Label:
outer layer / epidermis / epicarp / skin / scale;
cloves / (central) stem; [5]

(b) (i) (thin protective) covering / skin; AW [1]

(ii) **two** from:
one part / many;
central stem / none;
skin AW: loose / attached /speckled / plain;
correct comment on shape;
AVP; [MAX 2]

(c) **1** two equal samples (by mass or size) / equal reagents (by volume or concentration),
2 comparative point e.g. intensity of colour / positive and negative;
(ignore time factor)

Starch
3 iodine **solution / iodine in KI;**
4 black if positive / remains colour of iodine solution if negative;

Sugars
5 crush / grind / extract with water;
6 add Benedict's solutions or named chemicals;
7 heat (not warm);
8 colour change given green / yellow / orange / red / remains blue if negative;

Safety
S9 use of water bath – safety;
S10 test tube holders;
S11 safety / laboratory spectacles;
S12 use of lab coat;
S13 tie / hair tied back;

[Max 2 for safety and Max 5 for method] [MAX 6]

[Total: 14]

2 (a) (i) Any site where pressing against bone / cartilage a pulse can be measured;

(ii) **1** artery; (**R** vein and capillary)
2 surge / wave / AW of blood;
3 near the surface;
4 pressure against bone or cartilage; [MAX 2]

(b) (i) calculation x 4 for rate per minute; [72, 76, 68]
mean calculated; [72] (allow ecf for correct mean from incorrect figures) [2]

(ii) reliability / reduce error / show anomalies AW;
(ignore accuracy and fair test) [1]

(iii) **Two** from:
Exercise / physical work / activity; increase heart beat rate / demand for extra supply of blood / oxygen/ glucose / energy (for muscles);
Relaxation / sleeping / inactivity; decreases heart beat rate/ lowers demand for blood supply AW;
Adrenaline / stress / anxiety/ fear / fright; increases hbr; AW
alcohol; slows hbr;
coffee / caffeine; increases hbr;
smoking / nicotine; increases hbr;
illness / raised body temperature; increases hbr
being fit; lowers hbr;
I references to: diet / body mass / age / external temperature
mark across the rows [MAX 4]

(c) (i) graph
S – suitable scale to fill over half of printed grid;
P – plotted correctly;; *allow +/- 0.25 cm / 1/4 square*
(one error – 1 plot mark, if two errors – neither plot mark. Allow ecf from (b)(i).)
B – bars separate, not touching;
C – columns of equal width; [5]

(ii) higher body mass / heavier – slower heart beat rate or converse;
A negative correlation [1]

(d) lower body mass + higher heart rate + link to shorter life span / higher body mass + lower heart rate + link to longer life span;
all three factors are required [1]

[Total: 17]

3 (a) (i) red blood cell / erythrocyte;
white blood cell / leucocyte / lymphocyte / phagocyte;;
platelet / thrombocyte; [M

(ii) white blood cells / AW;
plasma / tissue fluid; [2]

(b) (i) 5 +/- 0.5mm; [1]

(ii) working $\frac{\text{measurement from (i)}}{800}$; ecf
correct answer with units; *(accept units wherever mentioned)*
4.5/800 = 0.005625 or 5.625 x 10^{-3} or round to 0.0056 or 5.6 x 10^{-3}
5/800 = 0.00625 or 6.25 x 10^{-3} or round to 0.006 or 6 x 10^{-3}
5.5/800 = 0.006875 or 6.875 x 10^{-3} or round to 0.007 or 7 x 10^{-3} [2]

(iii) to carry oxygen / oxyhaemoglobin; [1]

[Total: 9]