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

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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; [MAX 1]

(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; [MAX 3]

(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]