UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2011 question paper for the guidance of teachers

0610 BIOLOGY

0610/63 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.

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Question	Mark scheme	Mark allocation	Guidance
1 (a) (i)	7.0 to 9.8;	[1]	NB 0.6 cm exists below zero.
(ii)	11.6 [11.67] to 12.6;	[1]	Mark on table. Follow from **(a) (i)** ecf from **(a) (i)**.
(b) (i)	to find out which hand gives the faster response / quicker / better reflexes; to find out if the person is naturally right or left handed / dominant hand; accurate reference to this reflex pathway; AVP;	Max[1]	Ignore reaction time as given in the question. e.g. impulse along sensory neurone to brain / CNS to motor neurone Accept reaction time + comment about both hands Ignore right v left unqualified – insufficient
(ii)	(same) ruler / ruler of same type, weight, thickness; (same) time of day or specified; ruler falls straight down / OWTTE / dropped not thrust; (same) environmental conditions e.g. humidity, temperature, no wind; quiet surroundings – 'no distractions' / no eating or drinking; seated or standing throughout / arm or body / hand position; (same) gap between ruler and thumb / thumb position / thumb at 0 cm; same student / use student 1 only or student 2; AVP;	Max[3]	Accept ruler in same units of cm / mm Ignore height from which ruler is dropped Ignore same **place** unless qualified, but accept same environment Accept distance of hand from ruler Ignore addition of stimulant e.g. alertness of catcher / catcher is unaware of when drop will be made
(c) (i)	left hand 0.18 (sec); right hand 0.15 / 0.16 (sec);	[2]	Tolerance ± 0.01 s. ecf from **1(a) (ii)** if incorrect units e.g. cm – Max 1 if many decimal places given – ignore and check 2dp

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Question	Mark scheme	Mark allocation	Guidance
(ii)	student was right handed / right dominant / uses RH more; shorter / better / faster reaction time for right hand ORA; suggest figure 0.03 sec faster (ecf) / speed of nerve impulses faster ORA; reaction time decrease with practice;	Max[2]	Accept right hand is master hand Accept ref to right hemisphere of brain being dominant / producing quicker co-ordination Ignore just 2 figures quoted Ignore reaction time differs without qualification
(d)	two sets of data – one with stimulant and one without; more than one student or group of students involved; same or similar age / gender / fitness / arm length; time for drug to take effect; repeats; set amount of stimulant; taken set period before test; controlled (same) conditions e.g. time of day; safety factor; idea of comparing 2 results; reference to use of a control qualified;	Max[3]	Ignore the use of stimulant as a medicine Ignore irrelevant similarities Accept even if referral is to trial with stimulant only 'cup of tea' is acceptable. e.g. no wind / no distractions. Ignore "fair test" Safety in the environment or with dose size / quantity / medical conditions / no injections Ignore 'control' alone. If different investigation – max 1
		[Total:13]	

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<table>
<tr><th>Question</th><th>Mark scheme</th><th>Mark allocation</th><th>Guidance</th></tr>
<tr><td>2 (a)</td><td>Drawing:– O – clear line for correct outer shape and no shading and size longer than photo (70+ mm);

D – distinct fruitlets touching each other; min. 4 across and 5 down, max. 8 × 10 ;

S – remainder of stigma / style at least 3;

C – calyx attached with minimum of 2 sepals and maximum of 5 shown;

Label:– fruitlet / stigma / style / sepal / calyx / pericarp;</td><td>Max [5]</td><td>Drawing – Max [4]
one fruitlet: allow O and label for stigma. Max 2

Allow 3 small gaps

no more than 1 per fruitlet and correct relative size

Ignore stylised calyx

Ignore stalk / stem / fruit. Labels – Max [1]</td></tr>
<tr><td>(b) (i)</td><td><table><tr><td colspan="6">Tally of fruitlets in each fruit</td></tr><tr><td>50–59</td><td>60–69</td><td>70–79</td><td>80–89</td><td>90–99</td><td>100+</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>6</td><td>11</td><td>14</td><td>10</td><td>6</td><td>1</td></tr></table></td><td>[3]</td><td>following instruction and attempting to tally record;
“sticks” in at least 4 boxes (even if no bars present)

correct tally all correct;

all totals correct = 1 mark; accept ecf</td></tr>
</table>

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Question	Mark scheme	Mark allocation	Guidance
(ii)	**O –** orientation of axes**;** **L –** label 'x' number of **fruitlets** in fruits **and** 'y' frequency / tally / number of **fruits;** **S –** suitable even scale to fill half or more than ½ the grid in both directions**;** **P –** plot accuracy**;** **B –** neat, ruled and complete bars of equal width, touching, no gaps**;**	**[5]**	e.c.f histogram and line on same axes – **B**. max 4 minimum label for 'x' axis – 'number of fruitlets' alone / 'fruitlets in each fruit' and numbers should be placed centrally under columns. Tally size incorrect e.g. 50–60 instead of 50–59 …. no **L** mark. Accept last column as 100–109 **P** – accept ± ½ small square. ecf from tally chart Ignore shading. Columns should be <u>ruled</u> (to base) Line graph **O; L** and **S** only
(c)	normal distribution / unimodal / bell-shaped**;** more in the middle of range / biggest class is 70–79 / 60–89**;** few at the extremes / example / AW**;**	**Max[2]**	Ignore continuous as this applies to variation Accept most fruits have 70–79 / 70–79 is the most common (min is "70 – 79 fruitlets is higher") Accept "ends of graph declining" Accept ref to graph or fruitlets
(d)	animals or named example**;** eat / ingest / consume fruits**;** seeds unharmed not digested / resistant**;** deposit with faeces / egested / excreted / AW**;**	**Max[2]**	Accept bites / chews / eats fruit and spits seed out / we eat
		[Total:17]	

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Question	Mark scheme	Mark allocation	Guidance
3 (a) (i)	stem – central ring to include minimum of 4 distinct vascular bundles; vascular bundle divided correctly into two for x and p; xylem on inside labelled **and** phloem on outside labelled;	[3]	Draw and label Ignore LS instead of TS Accept minimum label 'x and p'
(ii)	root – central vascular strand; (xylem) central – star like and (phloem) in between; xylem and phloem correctly labelled;	[3]	Ignore LS instead of TS
(b) (i)	<u>sucrose</u>;	[1]	Ignore cane-sugar
(ii)	<u>starch</u>;	[1]	Ignore glycogen
(c)	Cut a section / crush different regions and test each one; add iodine solution; turns brown / yellow / orange **to** blue / blue – black / black / purple-black in areas where starch is present;	Max[2]	Ignore – if glucose given in 3**(b) (ii)** and Benedict's test given = 0 crush / grind alone = 0 Accept iodine in potassium iodide / drops of iodine / iodine is dripped on Ignore iodide solution Ignore if add ethanol or boil
		[Total:10]	

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