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

0610/05 Paper 5 (Practical Test), 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.

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Question			Expected Answers	Marks	Additional Guidance
1	(a)		*Drawing* size ; outline ; indication of a number of layers ; *Labels* (brown / red) scales / outer covering / scaly leaves / "skin" ; (fleshy) leaves / layers; growing point / shoot / bud / daughter bulb forming ; stem ; roots ; **(max 3)**	6	measuring at least 5cm in one direction a clear single line, showing narrowing towards the top and detail of base (flattened / roots) *A maximum of **three** for labels* **ACCEPT** 'outer layer'
1	(b)	(i)	*they both have ...* thin , protective covering / skin ; growing point / bud ; ref. to similar colour ; ref. to both , round / circular ;	1 max	*Look for positive statements, not negative statements* **NOT** 'both hard'
1	(b)	(ii)	*Comparative statements must be made* correct ref to colour difference ; many , layers / parts , (**S1**) v. , no layers / one part (**S2**) ; growing point on inside (**S1**) v. outside (**S2**) ; dry / loose , outer layer (**S1**) v. not dry / attached (**S2**) ; roots (**S1**) v. no roots (**S2**) ; scaly (**S1**) v. not scaly (**S2**) ; smooth surface (**S1**) v. rough surface (**S2**) ; AVP ;	2 max	***and** refer specifically to either S1 or S2* **ACCEPT** fleshy leaves v. none **ACCEPT** no eye(s) v. eye(s) e.g. size difference
1	(c)	(i)	*Recorded in Table 1.1*		
1	(c)	(ii)	*Recorded in Table 1.1*		

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Question			Expected Answers	Marks	Additional Guidance
1	(d)	(i)	add Benedict's (reagent / solution) ; specific volume ; heat in water bath / place in hot water / not heated directly ; explanation for using water bath related to safety ; use of , safety spectacles / test tube holder ; explanation for using safety goggles related to safety ; watch / leave , until colour changes / for a few minutes ;	4 max	a few cm^3 **or** the same volume as the test solution **NOT** avoiding , burning / scalding **IGNORE** wearing overalls / no eating / no drinking etc. Needs the idea of it not being an instant change
1	(d)	(ii)	*Recorded in Table 1.1*		
Table 1.1			*Award 1 mark per correct cell in Table 1.1*	4	**ACCEPT** unexpected results that are in line with the results shown in the Supervisor's Report **IGNORE** conclusions, as they are asked for observations **S1** must show more reducing sugar than **S2** (unless otherwise indicated in Supervisor's Report)

test	observations	
	S1	**S2**
starch	brown / orange / yellow / no change / no reaction ;	black / blue-black / dark blue ;
reducing sugar	green / yellow / orange / brown / red ;	blue-green / green / no change / no reaction ;

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Question			Expected Answers	Marks	Additional Guidance
1	(e)		(**S1**) does not contain starch ; (**S1**) contains sugars ; (**S2**) contains starch ; (**S2**) (perhaps) contains some sugars ; (**S1**) is a storage organ ; (**S2**) is (also) a storage organ ; ref to explanation / role of storage organs ; AVP ;	**4 max**	*Comments need to be in line with the expected observations (i.e. correct)* ***or*** *consistent with candidate's observations / conclusions* e.g. potato / **S2 ,** is a (stem) tuber onion / (**S1**) **,** is a bulb
			Total	**21**	

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Question			Expected Answers	Marks	Additional Guidance
2	(a)	(i)	neck / carotid (pulse) ; temple ; groin / femoral (pulse) ; other suitable location ;	1 max	*Labels should point to the appropriate location on Fig. 2.1* e.g. foot / thumb pulse / behind knee / inside of elbow
2	(a)	(ii)	artery / blood vessel , near surface ; passing / surge , of blood through , artery / blood vessel ; pressure against bone or cartilage ; AVP ;	2 max	**NOT** if vein also included **NOT** '**on** skin' **NOT** if vein also included e.g. ventricular systole blood not , pulsing / surging , in veins
2	(b)	(i)	pulses per 15 seconds recorded for 'attempt 1' ; pulse recorded for further 2 repeats ; calculation x 4 for rate min^{-1} ; mean calculated ;	4	**ALLOW** 12 – 30 beats i.e. 3 replicates in total **ALLOW** 12 – 30 beats must be correct for all 3 replicates **ALLOW** ecf mean must be correctly recorded to nearest second or to 1dp **ALLOW** ecf
2	(b)	(ii)	reliability / identify anomalous reading / AW ; heart rate can vary ;	1 max	e.g. to minimise the effect of mistakes **NOT** to avoid mistakes **IGNORE** ref. to accuracy

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Question			Expected Answers	Marks	Additional Guidance
2	(b)	(iii)	*Award 1 mark for a suitable factor and a further mark for an associated explanation relating to its effect on heart rate.*		*Items indicated with * are specified in the syllabus.*
			exercise ;		ora
			demand for extra supply of , blood / oxygen / glucose / energy , for muscles ;		ora (for being 'at rest')
			regular exercise / training ;		
			lowers heart rate ;		
			stress / anxiety / fear / fright / AW / adrenaline ;		
			increase in , * adrenaline / heart rate ;		**DO NOT CREDIT** adrenaline twice
			high body mass / obesity / AW ;		
			link with high heart rate ;		
			high blood pressure ;		ora
			decreases heart rate ;		ora (for low blood pressure)
			* alcohol ;		
			small quantities increase heart rate / (larger quantities) reduce heart rate / depressant ;		
			* heroin ;		
			decreases heart rate ;		
			caffeine ;		
			increases heart rate ;		
			nicotine / smoking ;		
			increases heart rate ;		
			illness / fever ;		
			raised temperature increases rate ;		
			environmental factor ;		e.g. altitude (gives increase) / high temperature (gives increase) / low temperature (gives decrease)
			corresponding increase or decrease ;		
			AVP suitable factor ;		
			AVP suitable effect ;	**4 max**	e.g. diet qualified / cholesterol qualified / age qualified

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Question			Expected Answers	Marks	Additional Guidance
2	(c)	(i)	*bar chart* **S** suitable and even scale on y axis **;** starts at 0 or a higher number **;** **G** to fill over half of printed grid (vertically) **;** **P** columns correctly plotted **; ;** (*two marks*)	5	*Candidates are being judged on their ability to plot the data from Table 2.2* realistically, 20 or 30 8 or more squares high minus 1 for each incorrect plot **CREDIT** points correctly plotted according to candidate's scale **DO NOT CREDIT** plots if being used as a line graph – they must be for columns
2	(c)	(ii)	higher body mass corresponds to (s)lower heart beat / ora **;**	1	
2	(d)		higher heart rate + lower body mass = (link to) shorter life span / ora **;**	1	
			Total	19	

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