

**MARK SCHEME for the October/November 2010 question paper  
for the guidance of teachers**

**0610 BIOLOGY**

**0610/51**

Paper 5 (Practical Test), maximum raw mark 40

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 October/November 2010 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

<b>Page 2</b>	<b>Mark Scheme: Teachers' version</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>IGCSE – October/November 2010</b>	<b>0610</b>	<b>51</b>

<b>Question</b>	<b>Mark scheme</b>		<b>Additional guidance</b> A. = accept, R. = reject, I. = ignore.
<b>1 (a)</b>	Table: 3 columns; Column headings appropriate + units; Neat ruled lines; Results recorded for three tubes;	[5]	if 2 columns, <b>A.</b> the headings <b>I.</b> absence of the word 'enzyme' Outer 'box' / 'frame' not needed for the neatness mark.
<b>(b) (i)</b>	greater volume with enzyme; greater volume with 3% enzyme than 1%; clearer juice;	[3]	<b>A.</b> relevant ref. to colour because question asks for 'appearance' <b>A.</b> converse = 'cloudy' – only applies to the 0% enzyme. <b>A.</b> ecf from results in table
<b>(ii)</b>	repeat readings; control temperature of incubation; control pH with use of buffers; more concentrations; use similar apples from same tree / same age;	[max 3]	<b>A.</b> same variety or ref. to named varieties. e.g. separate series of tests with other fruits / longer time / larger volume / use stop watch.

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Question	Mark scheme		Additional guidance A. = accept, R. = reject, I. = ignore.
(c) (i)	1. range of pHs; 2. control of pH;  3. same type / volume + pulp; 4. same volume / mass of enzyme; 5. concentration of enzyme; 6. same temperature; 7. same timings; 8. filtration; 9. ref. to using volume of juice to assess enzyme activity; 10. allow for repeat readings; 11. graph the results 12. calculate mean; 13. safety feature	[max 6]	more than 3. R. just 'different pHs' mark is for <i>how</i> it is done. Ideally with buffers but A. adding one, two or three drops of acid / references to different acidic and/or alkaline and/or neutral solutions A. named acids and / or alkalis.
(ii)	orientation of axes axes labels; rise and fall;	[3]	enzyme activity / volume of juice in cm <sup>3</sup> or ml [y] and pH [x]
<b>[Total: 20]</b>			

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<b>Question</b>	<b>Mark scheme</b>		<b>Additional guidance</b> A. = accept, R. = reject, I. = ignore.
<b>2 (a)</b>	<u>Drawing</u> clear outline, no shading; reasonable size; recognisable detail; <u>Labels</u> jointed leg / joint; hairs / hooks / exoskeleton / claw / cuticle / pollen basket;	[max 5]	Closed ends to leg. R. sketchy (fuzzy) line. R. ink leg at least 6 cm long showing leg hairs / 3 segments / claw  R. fur
<b>(b) (i)</b>	measurement of photograph Fig. 2.1 = 20 mm	[1]	+/- 1 mm 19, 20, 21
<b>(ii)</b>	calculation – <u>photograph size in mm / cm</u> magnification; actual size;	[2]	ecf. 0.038 – 0.04 – 0.042 or $4 \times 10^{-2}$ correct answer with no working – 2 marks. correct working with wrong answer – 1 mark. correct answer with wrong working – 1 mark.
<b>(c) (i)</b>	iodine solution; brown to blue/black; Benedict's solution / test / correct chemicals / Clinistix; heat; expected colour change; safety – in water bath / tongs, etc;	[4]	I. reference to 'warming'  safety point for either test, goggles for iodine goggles / overall / hair tied back I. gloves  independent marking, one mark for each correct box in table.
<b>(ii)</b>	starch – no change / stays brown; – none present; reducing sugar – became red; – <u>reducing sugar</u> present;	[4]	A. green / yellow / orange / red I. glucose
<b>(d)</b>	<u>honey bee</u> – insecta / insect / insectoid; <i>reason</i> – wings / 3 pairs or 6 legs / 3 body parts or head + thorax + abdomen / 1 pair of antennae / 1 pair of compound eyes;  <u>parasite</u> – arachnida; <i>reason</i> – 4 pairs of legs or 8 legs;	[4]	Completely independent, credit observation,  [not negative features]
<b>[Total: 20]</b>			