UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2008 question paper

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.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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.

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Question			Expected Answers	Mark	Additional Guidance
1	(a)		cream/white/beige/milky/cloudy, **and**, frothy/with bubbles/with foam/AW;	**[1]**	NOT brown/yellow
	(b)	(i)	red colour changes (slowly) to, orange/yellow; time reference with units (min); ref. to change in appearance of yeast;	**[2 max]**	IGNORE ref. to shaking yeast e.g. *more* frothy/*less* frothy/ volume *decreases*
		(ii)	acidic (gas); carbon dioxide; (produced by) respiration of, yeast/cells;	**[2 max]**	
	(c)		1 *measure*, 20 cm^3/volume, of yeast culture; 2 (gas) syringe/inverted gas cylinder; 3 (collect volume of gas for) set period of time; 4 repeat measurements with all conditions maintained; 5 calculate, mean/average; 6 divide measurement by time period; 7 airtight apparatus/stop leakage (of gas)/stop entry (of gas); 8 shake culture (so cells do not settle); 9 AVP;	**[5 max]**	idea of repeating whole experiment rather than consecutive readings for the same experiment e.g. temperature controlled water bath problem collecting gas (may dissolve in water/can't measure it if collected by downward delivery)
	(d)	(i)	clear outline of yeast cell **and** drawing more than 4 cm; any 2 labels from ... cell wall (two lines)/cell membrane/cytoplasm/nucleus/ nucleolus/vacuole/mitochondrion/granules;;	**[3]**	ACCEPT non-budding cell 1 mark per label, to a maximum of 2 if chloroplast/chlorophyll included, then only allow **1** label mark

<table>
<tr><td></td><td></td><td>(ii)</td><td>81 mm (+/–1 mm) / 8.1 cm (+/–0.1 cm) ;
correct drawing measurement ÷ 81 / 8.1 (× 5000);

correct answer (using candidate’s figures);</td><td>[3]

[Total: 16]</td><td>candidate's measurement should be from an equivalent position to XY
units do not need to be shown but the measurements used should be in the same units
credit with or without × 5000

answer should be correctly rounded to the nearest whole number, or given to a maximum of 2 decimal places</td></tr>
<tr><td>2</td><td>(a)</td><td>(i)</td><td>two containers with equal volumes of liquid;
egg in water/W1, resting at the bottom
and, egg in salt solution/W2, suspended in liquid;</td><td>[2]</td><td>ACCEPT W2 as vertical</td></tr>
<tr><td></td><td></td><td>(ii)</td><td>
<table>
<tr><th></th><th>W1</th><th>W2</th><th></th></tr>
<tr><td>size of the egg</td><td>large</td><td>small</td><td>;</td></tr>
<tr><td>position of the egg in liquid</td><td>sinks/on bottom/ not floating</td><td>floating</td><td>;</td></tr>
<tr><td>appearance of the surface membrane</td><td>tight/smooth/ not wrinkled/AW</td><td>wrinkled/loose/ AW</td><td>;</td></tr>
</table>
</td><td>[3]</td><td>NOT turgid/hard/flaccid/soft</td></tr>
<tr><td></td><td></td><td>(iii)</td><td>W1 hard(er)/turgid/AW;
W2 soft(er)/flaccid/AW;</td><td>[2]</td><td>ACCEPT ref. to rebound if clearly described
a comparative statement (e.g. W1 is harder than W2) will score 2 marks</td></tr>
</table>

		(iv)	1 (egg acts as a) cell; 2 egg membrane is acting as a partially permeable membrane; 3 **W1**/(egg/'cell') in water, gained water; 4 turgid/firm/expands; 5 water surrounding egg, has higher water potential/has fewer solutes/is more dilute, than inside egg; 6 **W2**/(egg/'cell') in salt solution, lost water; 7 flaccid/soft/shrinks; 8 solution surrounding egg, has lower water potential/ has more solutes/is more concentrated, than inside egg; 9 (water moves) by osmosis;	**[5 max]**	NOT semi-permeable ACCEPT absorb ACCEPT correct ref water gradient/hypotonic/ reverse argument NOT solution takes water NOT plasmolysed ACCEPT correct ref water gradient/hypertonic/ reverse argument
	(b)	**(i)**	even scaling of axes; all points plotted accurately +/–1 mm; ruled line between points/line of best fit;	**[3]**	at least ½ of the *x*-axis should be used if a bar chart is drawn, do not award marking point 3 – but the others can be awarded (if they are correct)
		(ii)	correctly read from candidate's graph, with units;	**[1]**	accurate to +/– half a square
		(iii)	equilibrium; water entering = water leaving/no <u>net</u> movement of water; equal concentration/same water potential; no, water potential/concentration, gradient ;	**[3 max]**	ACCEPT isotonic/same conc. of water NOT similar
	(c)	**(i)**	add, biuret A/biuret 1/sodium hydroxide/potassium hydroxide, **and**, biuret B/biuret 2/dilute copper sulphate; specified, quantity/volume, of reagent; use of test-tube or beaker;	**[2 max]**	ACCEPT biuret <u>solution</u> ACCEPT drops

		(ii)		C	D		[2]	IGNORE ref. to albumen/biuret 1 ACCEPT blue v. purple
			appearance of **reagent** before testing	blue	blue	;		
			colour after testing	light, mauve/purple/ lilac/AW	dark, mauve/purple/ lilac/AW	;		
		(iii)	sample **D** contains **more** protein/sample **C** contains **less** protein**;**				**[1]** **[Total: 24]**	ACCEPT **D** contains protein **and C** does not NOT **D** *is* a protein and **C** *is not* statement must be comparative ACCEPT an answer consistent with candidate's stated final colour