CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the March 2015 series

0610 BIOLOGY

0610/52 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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the March 2015 series for most Cambridge IGCSE® components.

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Abbreviations used in the Mark Scheme

- **;** separates marking points
- / separates alternatives within a marking point
- **R** reject
- **ignore** mark as if this material was not present
- **A** accept (a less than ideal answer which should be marked correct)
- AW alternative wording (accept other ways of expressing the same idea)
- underline words underlined (or grammatical variants of them) must be present
- wiggly underline the idea conveyed by the word(s) underlined must be present in the answer
- max indicates the maximum number of marks that can be awarded
- mark independently the second mark may be given even if the first mark is wrong
- ecf credit a correct statement that follows a previous wrong response
- ( ) the word / phrase in brackets is not required, but sets the context
- **ora** or reverse argument
- AVP any valid point

Question	Answer	Marks	Guidance for Examiners
1 (a) (i)	red / shade of red ; produce bubbles of gas / colour / smell ;	[2]	
(ii)	columns and rows distinct ; headings and units correct ; sufficient cells in table for observations and results ;	[3]	
(iii)	number of bubbles ; colour ; decrease / increase in bubbles over time ;	[3]	
(iv)	comparative statement of yeast relating to foam / bubbles / colour ;	[1]	
(v)	*description* 1. number of bubbles in one minute increases with time ; 2. A / B releases bubbles faster / **ora** ; 3. colour change from red to yellow / AW ; 4. A changed faster than B / **ora** ; 5. A formed foam more / faster than B / **ora** ; 6. suitable comparative data quote at a stated time ; *explanation* 7. releasing gas by respiration ; 8. gas released is carbon dioxide ; 9. carbon dioxide is acidic ; 10. causes hydrogencarbonate indicator to change red to yellow ; 11. A is respiring aerobically / B is respiring anaerobically ; 12. (the rate of) gas released in anaerobic respiration is slower / **ora** ;	[max 4]	

(b) (i)	to mix / spread (evenly) ; yeast cells sediment to bottom / AW ; to prepare a uniform sample ;		[max 1]	
(ii)	to exclude the oxygen / gas / air ;		[1]	
(iii)	(warm) temperature speeds up (enzyme / yeast) activity / respiration (rate) / metabolism / fermentation / AW ; temperature, is controlled / kept equal ;		[max 1]	
(c)	*error* 1. bubble counting for A + B not simultaneous ; 2. temperature decreases over course of investigation ; 3. inaccuracy of measuring volume of yeast culture ; 4. difficult to determine if oil formed a complete layer ; 5. indicator change subjective / hard to determine exact colour ; 6. lack of air tight seals ;	*improvement* two separate experiments / have two people ; use thermostatically controlled water bath for A + B ; use a larger volume to extract from / ensure syringe is placed near to bottom to avoid sucking up foam ; add oil before yeast culture / add larger volume of oil / AW ; use different indicator / indicator with greater range of colours; use colorimeter; have several colour standards set up for reference ; ensure bungs tight / add sealant ;	[max 4]	source of error and improvement must be linked, one mark for each source of error and one mark for each linked improvement
(d) (i)	asexual reproduction / mitosis / budding / AW ;		[1]	**A** cell is dividing / binary fission

(ii)	100 (mm) ; formula : length measured ÷ magnification ; 0.02 ;	[3]	**A** 99 – 101 (mm) **A** 0.0198 – 0.0202
		[Total: 24]	
2 (a) (i)	outline clear, unbroken lines ; size to show both outlines equal in size to fill more than the 6 cm of the available space ; drawing shows arrangement of seeds and calyx on outer view ; drawing shows arrangement of receptacle and surrounding vessels on cut surface ; label to show: sepal / calyx / seed(s) / receptacle / fleshy or edible part / AW ;	[5]	
(ii)	(fruit) is edible / eaten (by animals / humans) ; seeds pass through (body / alimentary canal) unharmed / undigested ; egested / deposited in, excreta / faeces ;	[max 2]	
(b) (i)	safety – test-tube holder or tongs / use of hot water bath / goggles / heat proof gloves / knife safety ; Benedict's reagent or component chemicals ; (reagent) heated ; orange / (brick) red / green / AW ; i.e. colour of positive result	[4]	
(ii)	biuret reagent or the two components ; expected positive result – (mauve / purple / lilac) AW ;	[2]	

(iii)		[max 3]	
	[Total: 16]		

	reducing sugar	protein
observation	(blue →) red ;	purple AW ;
conclusion	+ ive / present ;	+ ive / present ;