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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

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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

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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]	

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(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

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(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]	

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

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

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