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Cambridge International General Certificate of Secondary Education

MARK SCHEME for the May/June 2015 series

0610 BIOLOGY

0610/53 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.

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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
- 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	Mark scheme	Marks	Guidance for Examiners
1 (a)	yellow ; clear / transparent (for **A** or **B**) ; opaque / cloudy / bubbles (for **C**) ;	[3]	
(b) (i)	table drawn with (ruled) lines and appropriate number of cells ; headings appropriate ; all cells filled – observations recorded for all 6 tests ;	[3]	
(ii)	**A** – no colour change for both tests ; **B** – blue / green to brick red for test 2 ; **C** – blue / green to violet for test 1 **and** blue / green to brick red for test 2 ;	[3]	
(c) (i)	no reducing sugar or protein present ; healthy ;	[2]	
(ii)	only reducing sugar present ; diabetic ;	[2]	
(b) (iii)	reducing sugar and protein present ; diabetic **and** has kidney disease / problems ;	[2]	

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(d)	<table><tr><td>*error*</td><td>*improvement*</td></tr><tr><td>volumes not measured accurately ;</td><td>use measuring cylinder / pipette / AW ;</td></tr><tr><td>difficult to see colour changes ;</td><td>standards for comparison / charts / pH meter / AW ;</td></tr><tr><td>temperature may vary ;</td><td>maintain temperature by thermostat-controlled water bath ;</td></tr><tr><td>same time in water bath ;</td><td>use timer / AW ;</td></tr></table>	max [4]	improvement must be linked to error, but error mark can be awarded independently

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(e) (i) axes labelled and scaled evenly ;

size, plots to fill half or more than half of grid along both axes ;

all points plotted accurately ± ½ small square ;

line drawn point to point, ruled lines or smooth unbroken line ;

blood glucose concentration / mg per 100 cm^3	glucose excreted in urine / mg per minute
0	0
100	0
200	0
300	40
400	100
500	190
600	280
700	370

[4]

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(ii)	as blood sugar increases so does glucose excreted in urine **;** no glucose excreted in urine until blood glucose is over 200 mg per 100 cm^3 **;**	[2]	
(iii)	30 – 35 (mg per minute) **;**	[1]	check reading from candidate's graph
		[Total: 26]	
2 (a)	outline of whole flower – clear unbroken lines and no shading anywhere **;** size to fill at least ½ available space **;** *drawing detail:* detail of male parts **;** detail of female parts **;** **one** label from: stigma / style / ovary / filament / anther / stamen / petal / honey guides **;**	[5]	
(b) (i)	presence of large petals / stamens / anther / filaments **;**	[1]	similarity must be based on specimen provided for 2(a)
(ii)	no carpel / female parts / stigma / style / ovary **;**	[1]	similarity must be based on specimen provided for 2(a)
(c)	30 (mm) **;** length measured **;** 0.4 = 75 (mm) **;**	[3]	accept 29 – 31 mm 2 marks for correct answer with no working

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(d) (i)	concentration of sugar concentration ;	[1]	
(ii)	rate of growth of pollen tube / time factor to measure extension of pollen tube ;	[1]	
(d) (iii)	temperature ; (equally) spaced timing ; age or size / type of pollen grain or plant ; amount / volume of sugar solution ; type of sugar – or named sugar ; AVP ;	max [2]	
		[Total: 14]	

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