CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the May/June 2013 series

5090 BIOLOGY

5090/61 Paper 6 (Alternative to Practical), 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 May/June 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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Mark schemes will use these abbreviations:

- **;** separates marking points
- **/** alternatives
- **()** contents of brackets are not required but should be implied
- **R** reject
- **A** accept (for answers correctly cued by the question, or guidance for examiners)
- **Ig** ignore (for incorrect but irrelevant responses)
- **AW** alternative wording (where responses vary more than usual)
- **AVP** alternative valid point (where a greater than usual variety of responses is expected)
- **ORA** or reverse argument
- **underline** actual word underlined must be used by candidate (grammatical variants excepted)
- **max** indicates the maximum number of marks that can be given
- **+** statements on both sides of the + are needed for that mark

	Answer	Mark	Notes
1 (a) (i)	add Benedict's solution; heat; blue to green, yellow, or red; safety: water bath, goggles;	[4]	**A** water bath without qualification as a safety factor
(ii)	add iodine solution; (brown) to black;	[2]	**A** blue-black **R** blackish
(b)	remove solution / reducing sugar + starch; to ensure no solution / reducing sugar + starch in water (at start)/ **AW**;	[max 1]	

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(c)	1. diffusion; 2. from higher concentration to lower concentration / down concentration gradient; 3. glucose can pass / move out; 4. starch cannot pass; 5. reference to size of molecules; 6. 6. no energy needed;	[max 5]	
(d)	ileum / small intestine / villus /**AW** ; absorption / diffusion of glucose / reducing sugar / smaller / soluble molecules; (into) blood (water);	[3]	
		[Total: 15]	

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2 (a)	1. spheres and rods; 2. cocci / bacilli; 3. some dividing / have divided;	[max 2]		**A** cocci / bacilli within names **R** if name linked to incorrect shape **A** multiplying
(b)	bacteria produce acids; acids change milk protein; milk becomes thicker / creamy in texture;	[max 2]		**A** reduces pH
(c) (i)	1. time on x axis + numbers on y axis; 2. axes fully labelled; 3. linear scales; 4. correct plots; 5. clean neat line, ruled to join plots or smooth curve through plots;	[5]		2. minimum acceptable labels x : t / h y : no. of bacteria / millions 3. scales to fill at least ½ grid (x and y) 4. plots must be visible **A** x, +, dot or circled dot clearly visible
(ii)	less sugars available / build-up of toxic end product / acidity too high / **AW**;	[1]		**A** nutrients for sugars **A** pH too low
(d)	1. same volume / source / type of milk; 2. same mass / type of bacteria added; 3. different temps used; 4. suitable temps identified; 5. measure time taken for yoghurt to form; 6. repeat to obtain mean value ;	[max 4]		2 identified at least 3 temperatures in the range 5–50 °C incl
		[Total: 14]		

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3 (a) (i)	1. clear outlines of Fig. 3.1; 2. good overall proportions/size; 3. both anthers well drawn; 4. stigma well drawn; 5. labels: stamen + stigma + style ;	[5]	**R** lines if shaded elsewhere At least 9 cm in length stigma label must indicate top surface **R** style if carpel indicated
(ii)	tubular flower ; large stigma / not feathery; large petals / conspicuous petals; female and male reproductive parts / **AW** / enclosed / stamens in tubular structure; **AVP**;	[max 2]	**R** scent
(b)	1. method of transferring pollen grains; 2. use of (microscope/ glass) slide; 3. water / mountant /stain added; 4. cover slip / glass added; 5. avoidance of bubbles; 6. on microscope stage / view under low/high power;	[max 4]	**A** Named stain
		[Total: 11]	

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