CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the May/June 2015 series

5090 BIOLOGY

5090/31 Paper 3 (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 May/June 2015 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

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

Question	Expected answers	Additional guidance	Marks
1 (a)	credit neat drawing, appropriate shape ; testa double line ; cotyledon and testa correctly labelled ;	**Ig** plumule and radicle clear lines, at least 50 mm height	[3]
(b) (i)	description of results for testa, e.g. no fizzing, bubbling or frothing ; description of result for cotyledons, e.g. reference to froth ;	**A** some fizzing for testa **A** no change / nothing happens **Ig** ref. oxygen on its own, must reference bubbles, etc.	[2]
(ii)	reference to little or no catalase in testa ; catalase present in cotyledons ;	**A** ecf from previous questions correct comparative statement scores both marks	[2]
(iii)	testa is inactive **+** cotyledons active / metabolising / respiring / carrying out reactions / AW ;	**Ig** ref. to living vs. non-living	[1]

Question	Expected answers	Additional guidance	
(iv)	same mass / weight / surface area (of tissue) ; measure the volume of oxygen produced ; grind / crush tissue ; control temperature ; measure depth of froth / count no. bubbles released ;	**Ig** amount / size **A** surface area	[…
(c) (i)	reference to separating tissues ; iodine solution added ;		[2]
(ii)	starch present in cotyledons **+** no starch in testa / more starch in cotyledons ;	statement must be comparative or conclusions given for both tissues	[1]
(d) (i)	suitable scale (at least half of the grid used) **+** correct orientation of axes ; both axes fully labelled ; points plotted correctly ; neat ruled line correctly joining points ;	at least one zero required at origin **A** ± ½ square **R** extrapolation beyond 10	[4]
(ii)	2.5 (arbitrary units) ;	accept figure consistent with graph	[1]
(iii)	amylase breaks down (stored) starch ; to maltose / glucose ;	 **A** mono / disaccharides / reducing sugars	[2]
			[Total 19]
2 (a) (i)	cells drawn to correct scale with correct proportions ; quality of drawing ; cell wall shown with double line ; nucleus shown in correct position in both cells ; chloroplasts present ;	approx. 75 – 95 mm clean and clear lines, no internal shading min. 10 chloroplasts	[5]

Question	Expected answers	Additional guidance	
(ii)	cell wall ; chloroplasts ;		[2]
(b) (i)	xylem (vessel) ;		[1]
(ii)	transport of water ; transport of mineral salts / named example ; reference to (mechanical) support ;		[max 2]
(c)	reference to putting cut stem in water containing a dye / named example ; leave for suitable or stated time ; cut sections of stem ; observe with hand lens or microscope ; position of dye shows pathway / AW ;		[max 4]
			[Total 14]
3 (a)	**P** = scapula **Q** = humerus ; **R** = ulna ;	**A** shoulder blade	[3]
(b)	hinge ;	**A** synovial joint	[1]
(c)	ref. antagonistic pair (of muscles) ; triceps / extensor / or description of position contracting ; pulls on R ; biceps / flexor relaxing ; muscles attach to bones by tendons ;		[max 3]
			[Total 7]