

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

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## MARK SCHEME for the May/June 2015 series

### **5090 BIOLOGY**

**5090/32**

Paper 3 (Practical Test), maximum raw mark 40

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

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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

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 ;	<b>Ig</b> amount/size <b>A</b> 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   <b>A</b> $\pm \frac{1}{2}$ square <b>R</b> extrapolation beyond 10	[4]
(ii)	2.5 (arbitrary units) ;	accept figure consistent with graph	[1]
(iii)	amylase breaks down (stored) starch ;  to maltose/glucose ;	<b>A</b> mono/disaccharides/reducing sugars	[2]
<b>[Total 19]</b>			
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 ;		[1]
(b) (i)	<u>xylem</u> (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]
<b>[Total 14]</b>			
3 (a)	<b>P</b> = scapula <b>Q</b> = humerus ; <b>R</b> = ulna ;	<b>A</b> shoulder blade	[3]
(b)	hinge ;	<b>A</b> 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]
<b>[Total 7]</b>			