UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the October/November 2011 question paper for the guidance of teachers

5090 BIOLOGY

5090/31 Paper 3 (Practical Test), maximum raw mark 40

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1 **(a)** Bubbles on surface/escape ; ref. stomata
air/gases in leaf spaces ; expands [4]

(b) **(i)** and **(ii)** Table 1.1

	D2	D3
Observation	leaf turns black ; slowly/after a while ;	leaf stains brown/yellow ;
Conclusion	starch present	no starch in this leaf

Table 1.1

[up to 4]

(iii) To soften tissue/improve penetration/permeability/ref. to killing cells [1]

(iv) Ref. to light difference ;
Plant in dark/covered/in container [1]

(v) D2 plant in absence of light ;
No starch remaining ;
Explained re P/S ; respiration ; translocation ; [up to 4]

(c) Discs cut – cork borer ;
Dipped (briefly) in boiling water ;
Ref. to killing cells/cytoplasm/stop enzyme activity/increase permeability ;
Heated in ethanol ;
to remove chlorophyll/colour ;
ref. use of water – bath ;
for safety/risk of fire ; [up to 5]

[Total: 19]

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2 (a) (i) Heat with Benedict's ;
for some time ;
in hot water – bath
use same volume/equal amount of solution containing r/s ;
same volume/stated amount of Benedict's [4]

(ii) observe progressive colour change – green, yellow, orange (ppt) ;
rate of change ; [up to 1]

(iii)

	Glucose solution	**Solution from D4**
Observation	Yellow/orange/red	green/yellow/orange
Conclusion	strong presence of RS	pro rata

[2]

(iv) melon/D4 ; [1]

(b) replicate/repeat ;
OVP ; (e.g. filter to obtain juice/colorimeter/accurate volume measurement. [2]

[Total: 10]

3 (a) (i) clean lines ;
realistic ;
at least 5 cm ;
achene, with some structure shown ;
pappus with hairs well drawn ; [5]

(ii) Clearly shown where measured/ruled line ;
both dimensions clear, units once at least ;
correct expression for calculation ;
mag. correctly expressed ; [up to 3]
up to 2 d. p. rounded up/down acceptably

(iii) Large surface area/ref s.a. to volume ratio/wing-like/parachute/oval and broad ;
wind/air ;
resistance ;
delays fall to ground/ref to floating/gliding ;
to be carried further/long distance [up to 3]

[Total: 11]

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