

**UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS**

GCE O Level

**MARK SCHEME for the May/June 2006 question paper**

**5090 BIOLOGY**

**5090/03**

**Paper 3**

**maximum raw mark 40**

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which Examiners were initially instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

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1 (a) (i)

Table 1.1

	Observations		conclusions
	starch test	fat test	
<b>F1</b>	as per report	clear	consistent with report no fat/oil
<b>F2</b>	as per report	cloudy/milky	consistent with report fat/oil present

[4]

- (ii) break up material ;  
dissolve in ethanol ;  
by shaking/stirring ;  
add (to) water ;

[up to 3]

- (b) (i) 4 temp. readings in Table 1.2 ;  
starting temps. similar ;  
second readings higher ;  
F2 more than F1 ;  
rises correctly calculated ;

[5]

- (ii) substitutions correct for both ;  
answer correct for both ;  
F2 more than F1 ;

[3]

- (iii) F2 contains fat/oil ;  
more energy stored in fat than in CHO ;

[2]

- (iv) repeat and average ;  
means of increasing surface area ;  
insulating test-tube ;  
identical starting temps ;

[up to 3]

[Total : 20]

2 (a) S2

- softer ;  
smoother ;  
bigger ;

[2]

- (b) (i) cutting/grinding etc. ;  
heat with Benedict's ;  
in waterbath ;

[3]

- (ii) turned red (etc.) – (reducing) sugar present ;

[1]

- (c) ref osmosis ;  
higher water potential outside ;  
water enters (sultana) ;  
through partially permeable membrane ;

[up to 3]

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**(d) (i)** drawing marks: **D.3**

1. at least 5 cm clear, clean, realistic
2. tripartite, with seeds shown
3. vascular bundles

three labels from:

seed ;  
pericarp ;  
funicle ;  
loculus ;  
vascular bundle ;

**[3]**

**(ii)** at least 3 cm with some more detail ;  
attachment correct ;

**[2]**

**(iii)** line ruled and measured, units ;  
correct expression ;  
magnification correctly expressed ;

**[3]**

**[Total : 20]**