UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE O Level

MARK SCHEME for the May/June 2006 question paper

5090 BIOLOGY

5090/06 **Paper 6** **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*.

- CIE will not enter into discussion or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the May/June 2006 question papers for most IGCSE and GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

1 **(a)** **(i)** F1: no fat/oil, starch present ; **[1]**
F2: fat/oil present, no starch ; **[1]**

(ii) test for fat: break up/prepare food ;
add/mix with ethanol ;
ref clear (solution) ;
add/pour into water ;
cloudy if positive/fat present ; **[up to 3]**

(other test: allow 1)

test for starch: add iodine (solution) – food turns black ; **[1]**

(b) **(i)** In Table 1.2:

F1: 2 F2: 11 ; **[1]**

(ii) F1: 20 x 2 x 4.2 over 0.25 = 672 ;
F2: 20 x 11 x 4.2 over 0.5 = 1848 ;
F2 more than F1 ; **[3]**

(iii) F2 contains fat ;
higher energy content in fat ; **[2]**

(iv) repeat and average ;
same starting temperature of water ;
reduce delay in heating AW ;
insulate test-tube ;
increase area being heated ;
OVP ; **[up to 3]**

[Total : 15]

2 **(a)** **(i)** crush/cut up in water ;
heat with Benedict's ;
ref specified amount ;
use water-bath ; **[up to 3]**

(ii) orange/red colour/ppt ; **[1]**

(b) higher water potential outside ; **[1]**
ref osmosis ;
water enters sultana ;
through ppm ;
ref turgor ; **[up to 2]**

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

1. at least 6 cm realistic, clear and clean.
2. marginal pattern of flower edge well attempted.
3. tripartite with some seeds.

labels:

seed ;
pericarp/mesocarp/epicarp (outer layer) ;
loculus/placenta/AVP ; **[up to 2]**

(ii) indication on both Figs., accurately measured on Fig.2.3, units ;
expression and magnification correct ;
allowance for x 1.5 **[3]**

[Total : 15]

3 slide preparation:

suitable named material ;
cut thin section ;
using razor (blade)/scalpel ;
point of technique (guard etc.) ;

transfer it to slide – how ;
into/add mountant/water ;
put cover glass on ;
avoid bubbles ;
– how achieved (lowered with support/at angle ;

named stain (iodine/me Blue) ;
how applied ; **[up to 5]**

microscope:

place on stage ;
clips on ;
illumination described ; (mirror/built in light)
low power focused ;
to high power ;
point of care in using HP ; **[up to 3]**

recording:

drawing – LP plan ;
HP of cells ;
epidermis with no chloroplasts ;
ref mesophyll with chloroplasts ;
especially palisade ; **[up to 3]**

To max 10

[Total : 10]