

**UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS**

General Certificate of Education O Level

**MARK SCHEME for the November 2004 question papers**

**5090 BIOLOGY**

**5090/03**

**Paper 3 (Practical Test), maximum 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 November 2004 question papers for most IGCSE and GCE Advanced Level syllabuses.



**NOVEMBER 2004**

GCE O Level

**MARK SCHEME**

**MAXIMUM MARK: 40**

**SYLLABUS/COMPONENT: 5090/03**

**BIOLOGY  
Paper 3 (Practical Test)**



**1 (a) (i)**

Table 1.1

	<b>for reducing sugar</b>	<b>for protein</b>	<b>for bile salts</b>
reagent used	Benedict's solution } ;	biuret reagents } ;	sulphur } ;
how treated	added reagent then heated; in waterbath } ;	added reagent, shook/no heat } ;	put reagent on surface of solution } ;
result if present	yellow/orange/red (ppt) } ; R: green	turns mauve/violet etc. } ;	sulphur/powder sinks } ;
result if not present	stays/turned blue/no reaction } ; R: nothing happens	stays/turned blue /no reaction } ; R: nothing happens	sulphur floats } ;

[8]

Table 1.2

	<b>test results</b>		
<b>urine solution</b>	<b>reducing sugar</b>	<b>protein</b>	<b>bile salts</b>
<b>A</b>	stayed blue/-ve } ;	turned mauve/+ve ;	given
<b>B</b>	turned orange/+ve } ;	given	given
<b>C</b>	given	given	sulphur floated/-ve } ;
<b>D</b>	given	stayed blue/-ve ;	sulphur sank/+ve } ;

[4]

- (ii) A (contains protein, caused by) kidney disease;  
 B (contains glucose, caused by) diabetes;  
 C healthy patient;  
 D (contains bile salts, caused by) liver disease;

[4]

- (b) Bile emulsifies;  
 fat/oil;  
 description of emulsification/increasing s/a of droplets;  
 for enzyme to 'get at';  
 ref. lipase;  
 ref hydrolysis

up to [4]

**Total : 20**

Page 2	Mark Scheme	Syllabus	Paper
	BIOLOGY – NOVEMBER 2004	5090	3

- 2 (a)** Drawing marks: Body **B.[4]**
1. At least 8 cm long, clear, clean and realistic.
  2. Correctly (curved and) proportioned, esp, final segment
  3. Segmentation right across abdomen
  4. Large gill-cover.
- Appendages **A.[4]**
1. Main (thoracic) legs indicated.
  2. Eye clear.
  3. Antenna or base thereof.
  4. Tail, with multiple components.
- (b) (i)** Drawing marks: **D.[3]**
1. At least 5 cm, clear, clean and realistic, with terminal cerci
  2. Central and 4 lateral components shown.
  3. Ciliation correctly attempted.
- (ii)** Magnification marks:
1. Line correctly ruled and measured.
  2. Both measurements with appropriate units.  
[if cm – 0.1 accuracy]
  3. Expression and calculation clearly set out.
  4. Magnification and record suitable. **[4]**  
[up to 2 d.p.]
- (c) (i)**  $C_6H_{12}O_6 + 6O_2 = 6CO_2 + 6H_2O$ ;  
*[must balance]*  
**or:** glucose + oxygen; = carbon dioxide + water; **[2]**
- (ii)** Three from: salt water;  
aeration – by pump or plants ;  
light for photosynthesis;  
food for respiration;  
control of temp; (R. if ref enzymes' optimum)/pH  
filter/change water + reason; **up to [3]**
- Total : [20]**