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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the October/November 2007 question paper

5090 BIOLOGY

5090/06 Paper 6 (Alternative to Practical), maximum raw mark 40

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1 (a) (i) Graph marks:
1. *x*-axis labelled 'light intensity/arbitrary units'.
2. *y*-axis labelled 'number' or 'rate'/bubbles per minute'.
3. accurate and clear plotting.
4. curve (line) of – best fit/*ruled* connections.

Rev. axes: A: both axis labels = 1 mark ; and point 4 ;
Bar graph: A: 1 and 2. [4]

(ii) light saturation AW ;
CO_2/other factor limiting/ref 1 variable ; [2]

(b) (i) light source generates heat ;
affects rate of: reaction/photosyn./enzyme action [R: denatures]; [2]

(ii) time to settle/acclimatise ; [1]

(iii) move lamp/apparatus closer ;
use brighter/higher power bulb/more bulbs ; [2]

(iv) Four from: replicate readings/take mean ;
method of having uniform bubbles ;
maintain constant temp/w.bath etc. ;
collecting / measuring gas ;
more weed / longer time ; [ignore CO_2/HCO_3] [up to 3]

[Total: 14]

2 (a) (i) Drawing marks: [D.3]
1. Realistically complete, at least 8 cm, clear and clean.
2. Spores well shown with smaller proximal bulge.
3. 4–5 spores on main branches.

(ii) Measurement *with correct units* from place indicated ;
NB – *if in cm must give decimal place e.g. 4.0 cm.*
Expression clear and correct ;
[drawing measurement over equivalent on Fig.]
Mag. accurate and well expressed ;
[Up to 2 d.p, no more than 0.2 rounding]
Allowance for x 1000 ; [4]

(b) Holes, smears or filter paper discs on culture dishes;
[or a group of separate dishes]
dilutions mentioned ; R: volumes
clear areas measured/observed ;
how results assessed ;
replication ;
control qualified ;
constant environment/temp/volume/time ; [up to 4]

[Total: 11]

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3 (a) (i) Table 3.1

time/min	solution in Visking tube		solution in beaker	
	starch test	reducing sugar test	starch test	reducing sugar test
0	(blue) – black	blue	brown (etc.)	blue
2	less dark	blue – green	brown	blue – green
4	paler blue-(black)	green	brown	blue – green –etc
10	brown (etc.)	yellow – orange etc.	brown	yellow/green/ orange etc.

[1 for each of 4 columns = 4 , + all 16 spaces completed = 1] ; ; ; ; ; [5]

(ii) no further change/stays yellow/–ve for starch ; [1]

(iii) Two from: visking = gut wall (or named region) for absorption ;
contents represent digestion ;
surrounding water = blood system etc. ; [up to 2]

(b) (i) Level/meniscus rises in glass tube ; [1]

(ii) osmosis ;
explained ref. water potential ;
movement of water ;
correct pressure ref. ; [up to 3]

(c) smaller molecules R: particles etc. pass through ;
water always goes through ;
so does glucose/maltose/reducing sugar ;
not sucrose/starch ; [up to 3]

[Total: 15]

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