CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the October/November 2012 series

5090 BIOLOGY

5090/32 Paper 3 (Practical), maximum raw mark 40

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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1 **(a)** column A completed at least up to an appropriate colour change ; similarly with column B ;
good sequence of colours ;
fewer results recorded in B than in A ; [4]

(b) **(i)** correct times recorded ; [2]

(ii) speeds up / increases (rate of) reaction ;
relative speeds / numbers quoted / differences in time [2]

(c) **(i)** make observation of colour change clearer / easily seen **AW** ; [1]

(ii) mix the contents / **AW** ; [1]

(iii) same volume / amount in each test-tube ;
instead of sodium chloride / control / comparison; [2]

(d) **(i)** axes correctly orientated pH on x, time on y + fully labelled ;
scales to fill at least half printed grid and linear ;
plots clear and correct ;
curve cleanly drawn through most plots or plots neatly joined by ruled lines ;
R if plot is drawn to zero [4]

(ii) 5 ; (check graph) [1]

(iii) activity increases as pH increases to optimum/pH 5 ;
after optimum activity decreases as pH increases ;
high / low pH denatures / inactivates enzyme ;
changes shape of active site of enzyme ;
R enzyme killed [max 3]

2 **(a)** **(i)** Drawing:
at least 8 cm ;
outline with clear lines & good proportions ;
radicle and plumule well drawn ;

Labels:
radicle ; plumule ;
cotyledon ; [6]

(ii) correct measurements recorded (mm);
correct expression used ;
correct calculation with x or times and no units
and no more than 2 dps ; [3]

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(b) (i) colour given; shape – thin/narrow v thick **AW ;**
texture – rough/hairy v smooth/not hairy **AW** ;
seeds present or not – more v less / ref seed size ;
R lighter/darker colour
R size except for seeds [Max 2]

(ii) mass / volume/same amount of seed constant ;
grinding / cutting / crushing / **AW** of seed ;
Biuret reagent/solution ;
constant volume of biuret ;
correct colour change from blue to purple / violet **AW**
comparison eg amount of protein content with time
R measuring / grinding specimens, relate only to seed / seed content [Max 4]

[Total:15]

3 (a) one bone in upper part / biceps / thigh area
two bones in lower part / calf area
5 digits / pentadactyl ;
many bones in hand/wrist and foot/ankle ; [Max 3]

(b) X hinge / up and down / two dimensions in one plane / ref to 180 degrees ;
Y ball and socket / rotation / 3 planes / ref to 360 degrees ; [2]

[Total: 5]

[Paper Total: 40]

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