UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2007 question paper

0610 BIOLOGY

0610/05 Paper 5 (Practical Test), maximum raw mark 40

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International Examinations

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1 (a) (i) ***table design***
border and columns and rows with ruled lines ;
columns/rows , with headings ; [2]

(ii) ***filling in their table***
if film did not clear, (A) 'no change' or an explanation for missing time
time for pH 4 ;
time for pH 8 ;
suitable units (in heading or in each box) ; [3]

(b) (i) **A** axes correctly orientated ;
L labels on axes + units for time ;
S even scale (should include 0) ;
P plot 5 points correctly ;
R ruled line point to point of the plotted 5 points (not pH 4 and 8) ; [5]

(ii) most active/optimum/works best , at pH 7 ; *(**A**) neutral*
*(**A**) within 6.5 – 8 as a range*
less active/slower , at , acid/low , pH ;
less active/slower , at , alkaline/high , pH ; *(**A**) use of figures to make the points*
denatured enzyme ; *(**A**) description* [3 max]

(iii) own results plotted ;***look at their results table ~ to within half a square***
[N.B. tube A (+C) is pH8, tube B (+D) is pH4] [1]

(iv) **1** different enzyme/enzyme has different optimum pH ;
2 different <u>concentration</u> of enzyme ;
3 different <u>volume</u> of enzyme ;

4 carried out at <u>different</u> temperature ; *(**R**) temperature has an effect*
5 different , shaking/stirring ;

6 different , type of film/amount of protein on film ;
7 different sized pieces of film ; [2 max]

(c) **1** same volume of enzyme ;
2 same concentration of enzyme ;
3 same volume of substrate ;

4 same concentration of substrate ;
5 repeats ;

6 carry out , for stated range of/at (at least 3) different stated , temperatures ;
7 ref. to maintaining pH/carry out at optimum pH ;
8 ref. same , shaking/stirring/agitation , of tube ; [4 max]

[Total: 20]

Page 3	Mark Scheme	Syllabus	Paper
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2 (a) (i) ***drawing ~*** clear outline ;
includes petiole ;

labels ~ midrib/main vein ; *(**R**) mid vein*
network of/branching/lateral , veins ; *(**R**) parallel/veinlets*
petiole/leaf stalk ; *(**R**) 'stalk' alone*
lamina/leaf blade ; [5 max]

(ii) ***expect comparative statement unless it is clear that one surface <u>only</u> has the feature***

(upper surface)
veins less prominent ;
more shiny ;
darker colour ;
smoother/waxy ;
fewer/no , stomata ; [2 max]

(b) (i) total (+ correct units) ; [1]

(ii) means of , scoring/marking off , squares to avoid miscounting ;
number of whole squares ;
attempt to include the part squares ; [2 max]

(c) (i) bubbles on lower surface <u>and</u> , none/few , on upper surface ;
*(**A**) <u>more</u> bubbles on lower surface* [1]

(ii) air/gas , (trapped) in , leaf/intercellular spaces ;
air expands ;
air escapes through stomata (on lower surface) ;
more stomata on lower surface ; [2 max]

(d) (i) epidermal cell ;
guard cell ; [2]

(ii) (at least 2) guard cells <u>only</u> circled ; [1]

(e) 1 suitable use of microscope ;
2 preparation of epidermis on slide ; *(**A**) nail varnish peel*
3 detail ; e.g. cover with water & coverslip/use of staining

4 count the number of stomata in , field of view/given area ;
5 determine the area viewed in which stomata were counted ;
6 calculate the area of leaf/ref. to calculation in **(b)** ;
7 multiply up for the whole leaf ; [4 max]

[Total: 20]