

MARK SCHEME for the October/November 2006 question paper

0610 BIOLOGY

0610/06 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 instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began.

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.

The grade thresholds for various grades are published in the report on the examination for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses.

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Page 2	Mark Scheme	Syllabus Paper
	IGCSE - OCT/NOV 2006	0610

Question 1

Mark (b)(ii) first but record mark in margin on page 3

- (a) (i) shade in all of the central xylem; **[if other tissues are shaded – these must include the piliferous layer NOT the phloem]**
- shade in the innermost half of all vascular bundles; [2]
- (ii) xylem; **[no ecf] [if more than one tissue is named = 0] [ignore 'vessels']** [1]
- (b) (i) root hair/root hair cells/reject hair roots; [1]
- (ii) correct arrow indicating 'end of root'; **[if no arrow check on Fig.1.2]** [1]
- (c) **use numbers by ticks to indicate point awarded.**
- 1 same age(of shoot)/similar shoot/same number of leaves/same mass/weight; **[ignore same length – insufficient]**
- 2 same species/same type;
- 3/4 same temperature/warmth/light/wind/humidity ;;
- or** same conditions = 1 (2 possible marks for *identified* conditions)
- 5 same apparatus/set-up/concentration of dye in container;
- 6 same volume/amount of liquid/water;
- 7 same time [**A** mins, hours, days – even few hours if applies to both set-ups];
- 8 repeats;
- 9 method of measuring uptake **either** by bubble method **or** loss of coloured solution/water
- or** change in colour of plant;
- 10 AVP e.g. cutting the plant under water **or** adding oil to surface of water to prevent evaporation; [Max: 6]

[Total: 11]

Question 2

(a) **drawing: S larger than Fig. 2.1; [A whole crab (complete)/body with leg attached/body + detached leg] [wrong leg drawn = no S mark] allow antenna as part of body.**

O clear outline and no shading;

L three or four joints/parts to limb **X**; [must have line to 'end' the leg whether leg is attached or not to body]

labels: eye; [ignore 'simple' if included in label] [if end of eye is shaded in – ignore for **O** drawing mark]

jointed limb/segmented limb;
claw/hook/pointed end/sharp end;

[score as **D** and **L** marks 3 + 3 – Accept as a list beside drawing if clear] [if no labels on drawing check Fig.2.1]

[6]

(b) (i) Arthropod (a) [check spelling – if no confusion then accept e.g. arthropods]

[1]

(ii) exoskeleton/jointed limbs/segmented body; [ignore antennae] [treat as a list]

[1]

(iii) positive features --

Fig. 2.2	Fig. 2.3	Fig.2.4
wings [ignore number]/3 parts to body (head, thorax and abdomen in correct order)/compound eyes/3 pairs of legs or 6 legs; [ignore antennae]	Many(pairs of) legs/one or two pairs of legs per segment/more than 4 pairs of legs/many segments; [not more than 3 pairs of legs and segmented body] [ignore 'long body' references to eyes and antennae]	8 legs/4 pairs of legs/simple eyes only/2 parts to body/cephalothorax/AVP eg pedipalps, chelicerae; [ignore antennae]

[3]

(iv) Fig.2.2 insect or insecta;

Fig.2.3 myriapod/chilopod; [not millipede, myriapede or centipede]

Fig.2.4 arachnid; [not spider]

[3]

[Total: 14]

Page 4	Mark Scheme	Syllabus Paper
	IGCSE - OCT/NOV 2006	0610

Question 3

(a) (i) use numbers by ticks to indicate point awarded.

- 1 respiration; [of maggots]
- 2 use oxygen;
- 3 release/produce carbon dioxide/CO₂;
- 4 volume drops/decreases/shrinks/becomes less/AW;

[accept references to space left if connect to use of NaOH] [ignore references to vacuum]

- 5 pressure decreases/drops/becomes less;
[ignore references to breathing]

[Max: 3]

(ii) no maggots/dead maggots/glass beads/linked;
same apparatus/same set/same experiment;

[use same set up without maggots = 2] [ignore 'absence of NaOH] ['an experiment' alone = 0]

[2]

(b) (i) O orientation;

A labelling of axes; **[distance moved/mm is minimum]**

S scale; **[needs to be even and to fill more than half of the printed grid]**

P plot; **[+/- half a small printed square]**

L line; **[an accurate curve connecting all points or joined point to point by a ruled line and no extrapolation]**

[for histograms – can award O, A, S and P not L for the labelling of temperature the number must be central for each column]

[5]

(ii) Use numbers by ticks

1. increase with rise in temperature; **[ignore comments re: direct proportion]**
2. correct change at **35**°C;
3. higher temperature rate decreases; (for parts 1 and 3 look for a process taking place)
4. steepness or gradient of line;
5. any correct reference to 2 or more actual figures;

[Max: 3]

(ii) 1. enzymes;

2. optimum/fastest; **[linked to either enzyme or respiration]**

3. maggots more active/more or higher metabolism;

4. maggots respire faster/AW;

5. AVP; e.g. anomaly **[35°C refers to incorrect/freaky reading]**

[Max: 2]

[Total: 15]