UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2006 question paper

0610 BIOLOGY

0610/02 Paper 2, maximum raw mark 80

These mark schemes are published as an aid to teachers and students, to indicate the requirements of the examination. They show the basis on which Examiners were initially instructed to award marks. They do 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*.

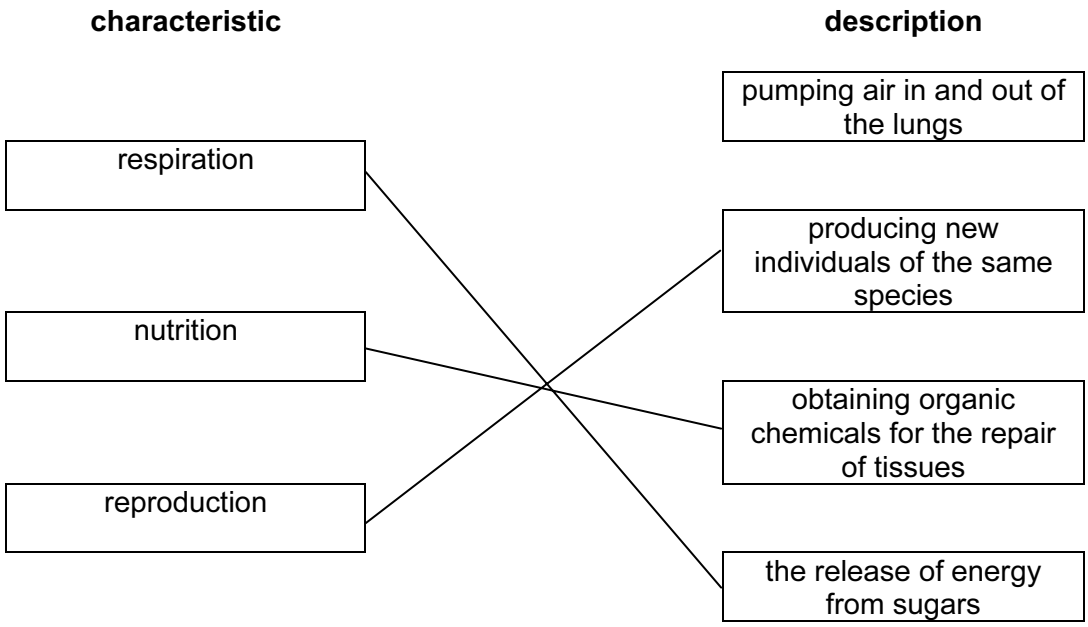
The minimum marks in these components needed for various grades were previously published with these mark schemes, but are now instead included in the Report on the Examination for this session.

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1 (a)



[3]

(b) excretion;

growth;

movement; I – locomotion

sensitivity / irritability; **[2]**

[Total: 5]

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2 **(a)** clear land for agriculture / cattle / crops;

clear land for building / factories / houses;

clear land for roads / airports;

remove timber for use,

Any two – 1 mark each **[2]**

(b) **(i)** reduced photosynthesis;

because of less plants;

decreased removal from / increases carbon dioxide levels in atmosphere;

increased release of carbon dioxide into atmosphere;

from burning / increased rotting;

accept other valid points

Any four – 1 mark each **[4]**

(ii) erosion by rain;

more leaching by rain;

because of lack of canopy;

reduced humus input to soil;

desertification;

Any two – 1 mark each **[2]**

(iii) disrupt food chains;

knock on effect within food webs / alter balance in food web;

destruction of potential resources;

loss of genetic pool material;

loss of biodiversity;

loss of habitats;

Any two – 1 mark each **[2]**

[Total: 10]

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3 **(a)** **(i)** label linked to sperm duct; **[1]**

(ii) label linked to ureter; **[1]**

(iii) label linked to urethra; **[1]**

(b) produce sperm;

produce testosterone / male hormone; **[2]**

(c) condom placed over penis;

cutting and tying sperm duct / vasectomy; **[2]**

(d) male parent / father has **XY** sex chromosome;

passes either **X** or **Y** to each child;

if **X** then child is female;

if **Y** then child is male;

as females always pass **X** to all children;

Any three – 1 mark each **[3]**

Credit relevant points shown on annotated genetic diagram

[Total: 10]

4 **(a)** **(i)** white; **[1]**

(ii) Rr; **[1]**

(b) Rr x Rr parents;

R r R r gametes;

RR Rr Rr rr offspring genotypes;

3 red flowers : 1 white flower offspring phenotypes;

matches ratio of seeds / 133 : 44;

Any four – 1 mark each **[4]**

(c) 1 red flower : 1 white flower; **[1]**

(d) water;

oxygen / air;

heat / warmth / suitable temperature; **[3]**

[Total: 10]

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5 **(a)** **(i)** sun; **[1]**

(ii) evaporation; **[1]**

(iii) transpiration / evapotranspiration; **[1]**

(iv) moist air rises;

cooling happens;

condensation;

Any two – 1 mark each **[2]**

(b) use in photosynthesis / raw material for reactions;

acts as a solvent;

transportation / carries substances as it moves in plant;

support / turgor;

Any two – 1 mark each **[2]**

(c) **(i)** water absorbed by osmosis;

cell has partially permeable membrane; R – wall

concentration gradient (water) between soil and cell;

soil with higher (water) concentration;

Any three – 1 mark each **[3]**

(ii) sea water reverses concentration (water) gradient;

plants /roots lose water/ exosmosis occurs;

wilting occurs;

water logged soil;

no / little oxygen;

root cells die / active transport stops;

Any three – 1 mark each **[3]**

[Total: 13]

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6 **(a)** **(i)** boy in puberty / still growing;

muscle development;

protein needed for growth and repair;

30 year old only needs protein for repair;

Any three – 1 mark each **[3]**

(ii) females regularly lose some in menstruation;

ref. to difference in size of 14 year olds;

iron needed for haemoglobin / red blood cells;

Any two – 1 mark each **[2]**

(iii) pregnant woman needs more calcium;

needed for both herself and for fetus;

calcium needed for bones / teeth;

Any two – 1 mark each **[2]**

(b) maintain tissues / prevent scurvy; **[1]**

[Total: 8]

7 **(a)** **(i)** pass air through limewater;

limewater goes white / milky / cloudy; **[2]**

(b) **(i)** glucose →; R – ref to oxygen

lactic acid; R – ref to carbon dioxide **[2]**

(ii) carbon dioxide released;

forms bubbles of gas in dough;

bread rises / spongy texture formed; **[3]**

(iii) heat kills yeast;

evaporates any ethanol;

gas bubbles expand more;

Any two – 1 mark each **[2]**

(c) aerobic respiration needs oxygen but anaerobic does not;

aerobic respiration releases more energy than anaerobic; **[2]**

[Total: 11]

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8 (a)

name of structure	letter label
duodenum	**Z;**
gall bladder	**W;**
liver	**V;**
pancreas	**Y;**
stomach	**X;**

[5]

(b) (i) bile; **[1]**

(ii) adrenaline; A - insulin / glucagon; **[1]**

(c) (i) stomach / X; **[1]**

(ii) duodenum / small intestine / Z; **[1]**

(d) (i) hepatic artery; **[1]**

(ii) red blood cells / haemoglobin; **[1]**

(iii) hepatic vein; **[1]**

(iv) plasma; **[1]**

[Total: 13]

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