UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2008 question paper

0610 BIOLOGY

0610/02 Paper 2 (Core Theory), maximum raw mark 80

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UNIVERSITY of CAMBRIDGE
International Examinations

1 **(a)** growth;
excretion (needs ref. to metabolic waste but not toxic waste);
nutrition (I – feeding);
movement (I – locomotion);
irritability/sensitivity (A – response to stimulus, I – sense/sensations/sensory);
reproduction (A – produce offspring);

accept any correct definitions
any four – 1 mark each [4]

(b) respiration is release of energy (from sugar);
A – correct equation with ref. to energy
R – produce/make energy

breathing is moving air/gases in and out of lungs/body/OWTTE;
I – ref. to specific gases [2]

[Total: 6]

2 1st space: <u>small;</u>
2nd space: <u>dull</u>;
3rd and 4th spaces: <u>light</u>; <u>dry</u>; (in either order)
5th and 6th spaces: <u>stamens</u>; <u>style</u>; (in either order)
must use words from the list
if more than one word in a space – mark first word and ignore the rest [6]

[Total: 6]

3 **(a)**

food material	digestive enzyme	end products of digestion
(*starch*)	amylase/ptyalin carbohydrase;	(*simple sugars*)
protein;	protease/pepsin/ trypsin;	(*amino acids*)
(*fat*)	(*lipase*)	fatty acids; glycerol;

I – refs to salivary/pancreatic

Beware refs to glycogen/glucose etc

[5]

(b) [amino acids]
broken down/deaminated;
formed into urea;
passed into/transported by blood/to be excreted/OWTTE;
I – refs to kidney functions

[glucose]
changed to glycogen;
stored (in liver/muscles);
R – stored as fat

Any four – 1 mark each [4]

[Total: 9]

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4 (a) (i) carbon dioxide/CO_2;
water/H_2O;
R – sunlight/light [2]

(ii) oxygen/O_2; [1]

(b) (i) iodine/potassium iodide (solution); [1]
mark **(b)(i)** and **(b)(ii)** independently.

(ii)

area	colour
A	brown colour;
B	brown colour;
C	black colour;
D	brown colour;

for brown accept colours of diluted iodine solution e.g. red-brown, amber, orange and yellow
for black accept blue-black [4]

(iii) [area **B**] no photosynthesis/starch as no chlorophyll/chloroplasts;
[area **D**] no photosynthesis/starch as no light; [2]

[Total: 10]

5 (a) (i) **J** – vena cava;
K – right atrium/RA;
L – aorta;
M – left ventricle/LV; [4]

(ii) both vena cava and pulmonary artery shaded;
I – shading in RA and RV
R – if shading in left side of heart [1]

(iii) arrows showing inflow via pulmonary vein
+ from atrium to ventricle
+ outflow via aorta;
R – if any arrows shown in VC to PA circuit [1]

(b) to prevent backflow/ensure one way flow of blood/OWTTE;
I – refs to semilunar valves/action
I – ref to valve names for **X**
I – ref to sides of heart

from ventricle to atrium/between atrium and ventricle [2]

[Total: 8]

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6 **(a)** **R** – oviduct/fallopian tube; (A – ovary duct)
S – vagina; [2]

(b) **(i)** label **F** linked to oviduct; [1]

(ii) label **I** linked to uterus; [1]

(i) limits – from start of oviduct funnel to where oviduct begins to widen into uterus
(ii) limits – from where oviduct starts to widen to the cervix
A – label line to wall or cavity
if no label line whole of letter to be within designated area

(c) **(i)** oestrogen; (A – phonetic spellings)
ovary; [2]

(ii) breasts/mammary glands;
R – refs to reproductive organs shown in Fig. 6.1
I – refs to behavioural features
widening of hips;
pubic/axillary hair/OWTTE;
rounding of outline/subcutaneous fat layer;
ref. to release of other sex hormones by pituitary gland;

any two – 1 mark each [2]

[Total: 8]

7 **(a)** **(i)** recessive (allele);
beware **(a)(i)** and **(a)(ii)** are the same clip [1]

(ii) child 8 shows NPS but neither parent (6 and 7) shows it;
must indicate both parents
I – refers to skipping a generation

thus allele for NPS present in parents/are carriers;
candidates may think NPS is an infection/disease and thus accept use of this terminology e.g. child 8 has disease but her parents do not

but latent/not expressed;

any two – 1 mark each [2]

(b) parents must be heterozygous;
child must inherit recessive from both parents;

could gain all marks with labelled diagram
accept any letters chosen as symbols but must follow normal convention, but beware use of X and Y that it is not a sex determination cross

next child 25%/1 in 4/1 to 3 chance;
beware extra statements that negate the 25% chance [3]

[Total: 6]

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8 **(a)** (following sewage release) bacteria population rises;
downstream/later on it falls; [2]

please remember that **(a)** is a description and **(b)** is an explanation and not transfer points from the latter to the former

(b) (large number of) bacteria present in sewage;
bacteria feed on materials in the sewage;
bacteria reproduce/population increases/numbers go up;
I – bacteria grow
(downstream) sewage/organic remains all broken down/food runs out;
therefore bacteria die/decrease in numbers;
A – in context
I – refs to any dilution effect

any four – 1 mark each [4]

[Total: 6]

9 **(a)** **(i)** (killer) whale; [1]

(ii) (Adelie) penguin; [1]

(b) (algae) → krill → (Adelie) penguin;
→ Leopard seal → killer whale;

(algae) → krill → fish;
→ (Adelie) penguin → Leopard seal;

(algae) → krill → squid;
→ Ross seal → Leopard seal;

any one chain, first two links correct;
other 2 links correct; [2]

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(c) (i) because less Ross seals/food for Leopard seal;
A – explanation based on Leopard seals eating more/only penguins and thus population only falling a little or not at all
population falls; [2]

(ii) **A** less Ross seal eating squid;
squid population rises;
squid eat more krill;
causes fall in krill population;
less food for fish;
fish population falls;

OR

B less Ross seals as food for Leopard seals;
Leopard seal population falls;
less Adelie penguins eaten;
Adelie penguin population rises;
more fish eaten by Adelie penguins;
fish population falls;

OR

C less Ross seals as food for Leopard seals;
Leopard seals eat more Adelie penguins;
so Leopard seal population stays the same;
Adelie penguin population falls;
so less fish eaten by Adelie penguins;
fish population rises;

OR

D less Ross seals as food for Leopard seals;
Leopard seals eat more Adelie penguins;
Adelie penguin population falls;
so less krill eaten by Adelie penguins;
so more food for fish;
fish population rises;

any four – 1 mark each [4]

prediction of rise or fall of fish population – 1 mark
can gain this without any further explanation
no prediction of rise or fall of fish population – MAX 2 for logical sequence in explanation
rest of explanation must be supporting evidence for their prediction to gain further marks
if there is a mix of 2 different explanations give mark consistent with the best single explanation

[Total: 10]

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10 (a) keeping conditions/factors within body/cell/internal environment;
need definition
I – specific examples

constant/within narrow limits/steady; [2]

(b) size of pupil/iris altered/OWTTE;
ref to contraction/relaxation of iris muscles/OWTTE;
attempts to keep amount of light reaching retina constant/OWTTE;
I – light entering eye
constant context needed
I – protection of the eye [3]

[Total: 5]

11 (a) **X** – vena cava; (beware renal vein)
Y – ureter;
Z – urethra; [3]

(b) fall in oxygen because of respiration;
fall in glucose because of respiration;
urea/(sodium) salts/water filtered out;
urea not reabsorbed;
water (sodium) salts partially reabsorbed;
A – selectively/variable reabsorption/ not all reabsorbed

any three – 1 mark each [3]
no marks for repeating data in table

[Total: 6]

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