

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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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.

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Page 2	Mark Scheme	Syllabus	Paper
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- 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: small;
2nd space: dull;
3rd and 4th spaces: light; dry; (in either order)
5th and 6th spaces: stamens; style; (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
(<i>starch</i>)	amylase/ptyalin carbohydrase;	(<i>simple sugars</i>)
protein;	protease/pepsin/ trypsin;	(<i>amino acids</i>)
(<i>fat</i>)	(<i>lipase</i>)	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]

Page 3	Mark Scheme	Syllabus	Paper
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- 4 (a) (i) carbon dioxide/CO₂;
water/H₂O;
R – sunlight/light [2]

- (ii) oxygen/O₂; [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; [2]
[area **D**] no photosynthesis/starch as no light;

[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]

Page 4	Mark Scheme	Syllabus	Paper
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6 (a) R – oviduct/fallopian tube; (A – ovary duct) [2]
S – vagina;

(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) [2]
ovary;

(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); [1]
beware (a)(i) and (a)(ii) are the same clip

(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]

Page 5	Mark Scheme	Syllabus	Paper
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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]

Page 6	Mark Scheme	Syllabus	Paper
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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]

Page 7	Mark Scheme	Syllabus	Paper
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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]