

JUNE 2002

INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK : 70

SYLLABUS/COMPONENT : 0610/2

**BIOLOGY
(CORE)**



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General notes

/	separates alternatives for a marking
;	separates points for the award of a mark
ORA	or reverse argument / reasoning
OWTTE	or words to that effect
AW	alternative wording
R	reject
I	ignore / irrelevant,
_____	this word or phrase and no other

1

type of organism	identifying feature
arachnid	body of 2 regions / sections / parts / 4 pairs of legs / 8 legs;
bird	feathers / beak / hard / calcareous shelled eggs;
insect	body of 3 regions / head, thorax, abdomen / 3 pairs of legs / 6 legs / spiracles / 2 pairs of wings;
dicotyledonous plant	network of leaf veins / not parallel veins / leaf with midrib / flower parts / petals / sepals in 4, 5 or 6's / broad leaves / 2 cotyledons;

[Total: 4]

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- 2 (a) solar energy;
 evaporation of water (from sea etc);
 (evapo)transpiration / OWTTE;
 cooling of vapour;
 condensation / cloud formation;
 precipitation / rainfall;
 return to source / via rivers / groundwater;
 Any four – 1 mark each [4]
- (b) deforestation
- (i) decreased transpiration / water vapour formation / less humidity / OWTTE;
 decreased cloud formation / precipitation / rainfall; [2]
- (ii) increased run off;
 (risk of) flooding;
 increased leaching / OWTTE;
 erosion;
 loss of habitats / reduced biodiversity;
 breakdown of food chains;
 less humus formation;
 increased carbon dioxide / reduced oxygen in atmosphere;
 Any two – 1 mark each [2]

Total [8]

3 (a) (i) sigmoid / S (curve); [1]

(ii)

name of phase	phase on graph
log	B;
lag	A;
stationary	C;

[3]

(b) phase C / stationary phase / plateau / flat portion occurs earlier;
 phase C at lower level / population size / phase B / population size
 does not go as high; [2]

Reject – population decreases / declines

Total [6]

4 (a) (i) umbilical (cord); [1]

(ii) it is deoxygenated / has more carbon dioxide / at a much lower pressure; [1]

(iii) have a thin membrane / one cell thick;

have a large surface area;

rich blood supply / many capillaries;

Any 1 – 1 mark each [1]

(b) differences in blood group / blood groups may be incompatible;

maternal blood pressure too great for fetal vessels / OWTTE;

reduces risk of transfer of pathogens / bacteria etc; Reject – germs

decreased risk of transfer of toxins / drugs / named drug;

Any two - 1 mark each [2]

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- (c) modifies contents of blood similar to lungs and kidneys;
oxygen added to fetal blood / fetus;
carbon dioxide removed from fetal blood / fetus;
urea / ammonia removed from fetal blood / fetus;
Any three - 1 mark each [3]

Total [8]

- 5 (a)(i) acts as food / named food / nutrients store for seed;
- (ii) B – becomes the shoot / stem and leaves;
C – becomes the root; [2]
- (b)(i) water content very variable / not all water is part of living material; [1]
- (ii) respiration occurs;
carbohydrates / starch / glucose / fats broken down / used up;
turned into carbon dioxide;
lost from seed / to air / environment;
drop in mass;
Any four - 1 mark [4]
- (iii) set P – (still only) respiration occurring;
set Q – in the light;
seedlings now photosynthesise;
forms starch / proteins / sugars / glucose / cellulose / cytoplasm;
allows growth / more cells / increase in dry mass;
Any four - 1 mark [4]

Total [12]

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6 Cross 1

correct genotypes for parents – BB and bb;

correct genotypes for gametes – B and b;

correct genotype for offspring - Bb; [3]

Cross 2

no mark for genotype of parents – allow continuous error from offspring of (a)

correct genotypes of gametes – B and b + B and b;

correct genotypes of offspring – BB, Bb and bb;

correct phenotypes of offspring and positioned below relevant genotype; [3]

Total [6]

7 (a) (i) pancreas; [1]

(ii) bile emulsifies fats / description;

increases surface area (for enzyme / lipase action);

neutralises (stomach) acid / hydrochloric acid / raises pH / optimum pH;

lipase digests / breaks down / converts fats;

into fatty acids and glycerol;

Any four – 1 mark each [4]

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- (b)(i) glucose / simple / reducing sugars;
amino acids; [2]
- (ii) changes / converts glucose into glycogen;
for storage; [2]
breaks down excess amino acids;
forms urea; [2]
- Total [11]

- 8 (a) (i) A – vena cava; [2]
B – pulmonary artery; [2]
- (ii) vessels C and D; [1]
- (iii) E – semilunar / watch pocket / aortic (valve);
to prevent the back flow of blood / allow one way flow; [2]
- (b)(i) reduce salt (intake);
reduce fat / cholesterol (intake);
increase fibre (intake);
limit total intake to avoid obesity / overweight;
Any two – 1 mark each [2]
- (ii) smoking;
stress;
lack of exercise;
genetic predisposition / OWTTE;
Any two - 1 mark each [2]

Total [9]

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9 (a) (i) depressant

slows down responses / brain activity / speed of nerve impulses /
increases reaction times;

addictive

causes craving / body to demand more of it / cause withdrawal
symptoms if no longer available; [2]

(ii) damage to liver / liver cells / cirrhosis;

stomach ulcers;

increase in blood pressure;

hardening of arteries;

brain damage / destroy / kill brain cells;

Any two – 1 mark each [2]

(b) slows reactions / increase reaction / thinking times;

reduces powers of judgement / sleepiness;

visual disturbance / likely to upset vision interpretation / dizziness;

lack of inhibitions / become (more) reckless;

nausea;

Any two – 1 mark each [2]

Total [6]