

**JUNE 2004**

**INTERNATIONAL GCSE**

**MARK SCHEME**

**MAXIMUM MARK: 80**

**SYLLABUS/COMPONENT: 0610/02**

**BIOLOGY**  
**Paper 2 (Core)**



|        |                     |          |       |
|--------|---------------------|----------|-------|
| Page 1 | Mark Scheme         | Syllabus | Paper |
|        | BIOLOGY – JUNE 2004 | 0610     | 2     |

**Question 1**

- (a) (i) X labelled log/logarithmic/exponential phase; R - lag [1]
- (ii) too little food materials/nutrients/sugar/glucose; I - starch  
(build up) of waste/toxic products/alcohol/ethanol; [2]
- (b) glucose/C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>; R - if any ref. to oxygen  
ethanol/alcohol/2C<sub>2</sub>H<sub>5</sub>OH + carbon dioxide/2CO<sub>2</sub>; [2]  
If using symbols then formulae must be correct and must balance
- (c) liver;  
destroys/damages cells/causes cirrhosis/impairs functions;  
brain;  
destroys damages cells/impairs functions/named function/slows impulses/reactions;  
stomach;  
develops ulcers/damages lining;  
Any two pairs – 2 marks each [4]

**Total [9]****Question 2**

- (a) A – cervix;  
B – vagina/birth canal; [2]
- (b) (i) F – label indicating cavity of oviduct;  
(ii) G – label indicating ovary;  
(iii) O – label indicating ovary; [3]
- (c) widening of hips;  
development of breasts/mammary glands;  
growth of pubic/axillary hair;  
subcutaneous fat layer;  
Any three – 1 mark each [3]

|        |                     |          |       |
|--------|---------------------|----------|-------|
| Page 2 | Mark Scheme         | Syllabus | Paper |
|        | BIOLOGY – JUNE 2004 | 0610     | 2     |

- (d) shedding of uterine lining/menstruation/(menstrual) period;  
 build up of new lining;  
 maturing of ovum;  
 ovulation;  
 vascularisation/maintenance of lining;  
 breakdown of lining if ovum not fertilised/no breakdown if ovum fertilised;  
 Any four – 1 mark each [4]

**Total [12]**

**Question 3**

(a)

| Diagram letter | Name of cereal  |
|----------------|-----------------|
| <b>A</b>       | <i>Secale</i>   |
| <b>B</b>       | <i>Oryza</i>    |
| <b>C</b>       | <i>Triticum</i> |
| <b>D</b>       | <i>Hordeum</i>  |
| <b>E</b>       | <i>Avena</i>    |

First four correct responses – 1 mark each [4]

- (b) no coloured petals/inconspicuous flowers;  
 no nectary/nectar/nectary guides;  
 no scent/odour;  
 stamens exposed outside of petals/OWTTE;  
 stigma exposed outside of petals/OWTTE;  
 feathery stigma;  
 Any three – 1 mark each [3]

- (c) (i) magnesium needed to make chlorophyll;  
 nitrates needed to make amino acids/protein/enzymes/DNA; [2]
- (ii) increased growth of algae/aquatic plants;  
 covers water surface/blocks entry of light;  
 underwater plants etc die;  
 (decay) bacteria/decomposers increase;  
 use up oxygen;  
 water becomes anaerobic;  
 aquatic animals die/migrate;  
 eutrophication;  
 Any four – 1 mark each [4]

**Total [13]**

|        |                     |          |       |
|--------|---------------------|----------|-------|
| Page 3 | Mark Scheme         | Syllabus | Paper |
|        | BIOLOGY – JUNE 2004 | 0610     | 2     |

**Question 4**

- (a) suitable scale and label on Y axis;  
at least 6 points plotted accurately;  
points joined; [3]
- (b) (i) (rate of water loss) will decrease/lower peak;  
because (increased humidity) decreases concentration gradient; [2]
- (ii) light/sunlight;  
affects opening of stomata;  
brighter light (- wider opening) increases water loss;  
temperature/heat;  
affects humidity of air/concentration gradient/higher temp particles/molecules move quicker;  
higher temperature (- lower humidity) increases water loss/rate of transpiration rises;  
wind/air movement;  
moves humid air/water molecules/particles away from stomata/alters concentration gradient;  
more wind (- more dispersal of water vapour) increases water loss;  
Any two factors plus explanation – 3 marks each [6]
- (c) (i) xylem (vessels); [1]
- (ii) support/skeletal tissue/transportes minerals; [1]
- Total [13]**

**Question 5**

- twenty-three/23;  
forty-four/44;  
haploid;  
zygote;  
Y; [5]
- Total [5]**

|        |                     |          |       |
|--------|---------------------|----------|-------|
| Page 4 | Mark Scheme         | Syllabus | Paper |
|        | BIOLOGY – JUNE 2004 | 0610     | 2     |

**Question 6**

| food material | digestive enzyme          | source of enzyme | end products                                  |
|---------------|---------------------------|------------------|---|
|               | amylase/<br>carbohydrase; | pancreas;        | maltose/glucose/<br>simple/reducing<br>sugar; |
| protein;      | protease/pepsin;          |                  | polypeptides/amino<br>acids;                  |
|               | lipase;                   |                  | glycerol;                                     |

[8]

**Total [8]****Question 7**

(a) (i) spider/fox/toad/lizard; [1]

(ii) primary consumer eats only vegetation/plants/producers;

e.g. herbivorous insect/vole/rabbit;

secondary consumer eats meat/flesh/animals/primary consumers/herbivore;  
e.g. stoat/fox/kestrel/carnivorous insect/spider/toad/lizard; [4]

(b) (i) sun/sunlight; [1]

(ii) rabbits maintain a constant body temperature/ref. to higher metabolic rate;

temperature above environment;

greater heat loss to the environment;

loss of more energy in faeces/urine/in excreta/via excretion by rabbit;

Any three – 1 mark each [3]

(c) rabbit population drops (because of disease outbreak);

less food for stoats/more food for voles;

they eat more voles/voles increase in number;

less food for kestrels/more food for kestrels;

kestrels decrease/kestrels increase;

Any four – 1 mark each (in context of one prediction) [4]

**Total [13]**

|               |                            |                 |              |
|---------------|----------------------------|-----------------|--------------|
| <b>Page 5</b> | <b>Mark Scheme</b>         | <b>Syllabus</b> | <b>Paper</b> |
|               | <b>BIOLOGY – JUNE 2004</b> | <b>0610</b>     | <b>2</b>     |

**Question 8**

- (a)** (during exercise) muscles need more energy;  
 released by respiration;  
 need supply of more oxygen; I - air  
 (more) glucose;  
 need removal of more carbon dioxide/heat;  
 (these are) carried in blood;  
 (Only need ref. to more once in response)
- Any four – 1 mark each [4]
- (b) (i)** adrenalin; [1]
- (ii)** (increase) the rate of beating;  
 (increase) depth of beat/stroke volume/volume of blood pumped at each beat; [2]

**Total [7]**