

Mark Scheme (Results)

January 2012

International GCSE Human Biology
(4HB0) Paper 02

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INTERNATIONAL GCSE HUMAN BIOLOGY 4HBO 02 – JANUARY 2012

| Question number | | | Answer | Marks |
|-----------------|---|----|--|-------|
| 1 | a | | A thermometer; B beaker; C tripod; Accept tripod stand, but not stand on its own | 3 |
| | b | | Two from: Goggles/eye protection; Tongs/protective gloves/asbestos/heat mat; Tie hair back/roll sleeves up; | 2 |
| | c | i | 27; | 1 |
| | c | ii | 23;; One mark for 50 - answer to part i | 2 |
| | | | | |

Total 8 marks

| Question number | | | Answer | Marks |
|-----------------|---|----|--|--------|
| 2 | a | i | Rises (with age); Until 18/35 or falls after 35; | 1 1 |
| | | ii | More energy; For growth/development/protein synthesis (for the unborn baby) or to carry the baby; | 2 |
| | b | | Two from: Reference to poorer growth; Reference to impaired repair; Kwashiorkor/swollen stomach; Problems with muscles/anaemia/weakened immune system; | 2 |
| | | | | |

Total 6 marks

| Question number | | | Answer | Marks |
|-----------------|---|----|--|--------|
| 3 | a | i | higher; | 1 |
| | | ii | Blood is flowing/moving; (Maintains) low concentration in blood; | 2 |
| | b | i | Right hand side level higher than before; Left hand side level lower than before; | 1 1 |
| | | ii | Water; | 1 |
| | | | | |

Total 6 marks

| Question number | | | Answer | Marks |
|-----------------|---|----|--|-------------|
| 4 | a | i | Nucleus correctly labelled; Myelin sheath correctly labelled; | 2 |
| | | ii | Arrow going away from the cell body; | 1 |
| | b | | Insulin; Pancreas; Glucagon; Negative; | 4 |
| | c | | fast blood; slow; short long; | 1 1 1 |
| | | | | |

Total 10 mark

| Question number | | | Answer | Marks |
|-----------------|---|-----|--|--------|
| 5 | a | | Reliability; | 1 |
| | b | i | 20;; One mark for 60 in working | 1 1 |
| | | ii | 18/attempt 2 at 8 mins; | 1 |
| | | iii | Breathing rate increases with increased time of exercise; increase slows/levels off; | 1 1 |
| | | iv | More energy needed (during exercise); More oxygen; Respiration; Increased carbon dioxide; | 3 max |
| | c | | Strengthens; (Heart) muscle; | 1 1 |
| | | | | |

Total 11 mark

| Question number | | | Answer | Marks |
|-----------------|---|----|--|-------------|
| 6 | a | | C ₆ H ₁₂ O ₆ ; 6CO ₂ ; 6 H ₂ O; | 1 1 1 |
| | b | i | limewater; turns cloudy; (also allow hydrogen carbonate)and turns yellow | 1 1 |
| | | ii | Measure <u>volume</u> of gas collected; Use measuring cylinder/gas syringe or eq.; | 1 1 |
| | | | | |

Total 7 marks

| Question number | | | Answer | Marks |
|-----------------|---|-----|---|-------|
| 7 | a | | Four from: Eutrophication; <u>More or excessive</u> plant/algae growth/algal bloom; Blocking out light; Increase in microorganisms (feeding on dead plants); Respiration; Decrease in oxygen; Fish die; | 4 |
| | b | i | Three from: Breakdown of sewage/organic material; To <u>harmless</u> inorganic material/nitrogen gas; Anaerobic bacteria/respiration; Production of methane; Aerobic bacteria/respiration; Activated sludge; | 3 |
| | | ii | 1 mark for control, e.g. temperature; 1 mark for explanation, e.g. bacteria grow at different rates at different temperatures; | 2 |
| | | iii | Three from: Mutate to resistant form; Non-resistant bacteria are killed (by antibiotics); Only resistant bacteria survive; Go one to reproduce/pass on the (resistant) gene; Increase over time/several generations; | 3 |
| | | | | |

Total 12 mark
PAPER TOTAL: 60 MARKS

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