

Mark Scheme (Results)

March 2013

GCSE Biology
5BI1F/01

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| Question Number | Answer | Acceptable answers | Mark |
|-----------------|----------------------|--------------------|------------|
| 1a(i) | A ☒ bacterium | | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|-------------------------|--------------------|------------|
| 1a(ii) | food (1) viruses (1) | | (2) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|---|---------------------------------------|------------|
| 1a(iii) | A statement to include any two of the following mucus (1) cilia (1) skin (1) (hydrochloric)stomach acid (1) lysozymes / tears (1) OR a detailed description of how one of the above prevents the pathogen entering (2) | scab formation nasal hairs (1) | (2) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|-------------|--------------------|------------|
| 1(b)(i) | 16 (mm) (1) | | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|--|--------------------------------|------------|
| 1(b)(ii) | <p>An explanation including the following points</p> <ul style="list-style-type: none"> • A (1) • there is a <u>larger</u> / <u>largest</u> area where the bacteria have not grown (1) | <u>largest</u> light grey area | (2) |

Total for question 1 = 8 marks

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|---|--------------------|------------|
| 2(a)(i) | <input checked="" type="checkbox"/> D bb | | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|--------------|--------------------|------------|
| 2(a)(ii) | Heterozygous | | (1) |

| Question Number | Answer | Acceptable answers | Mark | | | | | | | | | |
|------------------|--|--------------------|------|---|---|----|----|---|----|----|--|------------|
| 2(a)(iii) | <p>A correctly completed Punnett square:</p> <table border="1" style="margin-left: 40px;"> <tr> <td></td> <td>B</td> <td>b</td> </tr> <tr> <td>b</td> <td>Bb</td> <td>bb</td> </tr> <tr> <td>b</td> <td>Bb</td> <td>bb</td> </tr> </table> | | B | b | b | Bb | bb | b | Bb | bb | | (1) |
| | B | b | | | | | | | | | | |
| b | Bb | bb | | | | | | | | | | |
| b | Bb | bb | | | | | | | | | | |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|--------|--------------------|------------|
| 2(a)(iv) | 50% | | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|---|---|------------|
| 2(b)(i) | <p>An explanation linking the following points:</p> <ul style="list-style-type: none"> • parents were carriers (1) • Sue inherited a recessive allele from each parent / Sue has <u>2</u> recessive alleles (1) | <p>heterozygous / both parents have a recessive allele</p> <p>accept gene</p> | (2) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|--|---|------------|
| 2(b)(ii) | An description linking the following points: <ul style="list-style-type: none"> • build-up of / excess mucus • causing restriction in the lungs • oxygen diffusion is difficult | thick / sticky mucus absorption / taking in / uptake | (2) |

Total for Question 2 = 8 marks

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|--|--|------------|
| 3a | <p>The diagram shows two boxes on the left: 'painkiller' and 'hallucinogen'. On the right, there are five boxes: 'morphine', 'caffeine', 'antibiotic', 'nicotine', and 'LSD'. Lines connect 'painkiller' to 'morphine' and 'hallucinogen' to 'LSD'. There are also black dots on the right side of each of the five boxes, indicating potential connection points.</p> | <p>1 mark for each correct line</p> <p>If more than 1 line drawn from either box on the left then 0 marks for that box</p> | (2) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|----------------------------|--------------------|------------|
| 3b(i) | a cancer causing substance | | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|------------------------------|---|------------|
| 3b(ii) | 39.7 and 21.2 (1) 60.9(%) | Two marks for correct answer ECF for correct working of two wrong numbers chosen (1) | (2) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|--|--|------------|
| 3b(iii) | <p>an explanation to include three of the following points</p> <ul style="list-style-type: none"> • effect on the lungs (1) • breathing problems (1) • effect on oxygen levels (in blood)(1) • reduction (1) | <p>CO being transported in place of oxygen / carrying capacity</p> <p>any idea of less exercise carried out / harder to exercise</p> | (3) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|---|--|------------|
| 3c | <p>A description including any two of the following</p> <ul style="list-style-type: none"> • cirrhosis of liver (1) • brain damage (1) • kidney damage (1) | <p>Do not accept any failure / disease of an organ</p> <p>liver damage</p> | (2) |

Total for question 3 = 10 marks

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|---|--------------------|------------|
| 4a(i) | <input checked="" type="checkbox"/> D pancreas | | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|---------|--------------------|------------|
| 4a(ii) | insulin | | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|------------------|---|---|------------|
| 4(a)(iii) | <p>A description linking two of the following:</p> <ul style="list-style-type: none"> • glucose converted (1) • into glycogen (1) • (glycogen) is stored (1) | <p>Ignore glucose removal</p> <p>do not accept "glucose being stored in liver" (unless it is "stored <u>as</u> glycogen")</p> | (2) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|---|---|------------|
| 4(b)(i) | <p>A description linking the following:</p> <ul style="list-style-type: none"> • receptors (1) • in the skin (1) • messages sent to the hypothalamus (1) | <p>accept brain/CNS</p> <p>do not accept spinal cord on its own</p> | (2) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|---|--|------------|
| 4(b)(ii) | <p>An explanation linking the following:</p> <ul style="list-style-type: none"> • sweat released (1) • evaporated (1) • body temperature reduced (1) | <p>"when we sweat"</p> <p>cools body</p> | (2) |

| Question Number | Answer | Acceptable answers | Mark |
|------------------|--|---------------------------|------------|
| 4(b)(iii) | An explanation linking the following: <ul style="list-style-type: none"> • erector muscles (1) • raise the hair (1) • to trap a layer of air / insulate (1) | not trapping warmth /heat | (2) |

Total for question 4 = 10 marks

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|--------|--------------------|------------|
| 5(a)(i) | 190 | | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|---|--------------------|------------|
| 5(a)(ii) | <p>A description including any two of the following points</p> <ul style="list-style-type: none"> • an increase in sulfur dioxide will decrease the lichen (1) • comparison / manipulation of figures from at least two areas (1) | ORA | (2) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|---|--------------------|------------|
| 5(b)(i) | D <input checked="" type="checkbox"/> stoneflies | | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|--|-------------------------------|------------|
| 5(b)(ii) | <p>increases (1)</p> <p>nitrites (1)</p> | Answers must be in that order | (2) |

| Question Number | | Indicative Content | Mark |
|-----------------|-------------------|---|------------|
| QWC | *5(b)(iii) | <p>A explanation to include some of the following points</p> <ul style="list-style-type: none"> • (over) use of nitrates / fertilisers • nitrates leach out of soil (by rain water) • nitrates dissolved in the rain water move into the stream • algae grow (rapidly) / algal bloom / blocking sunlight • plants underneath the surface cannot grow (photosynthesise) • these underwater plants will die and no oxygen will be produced • bacteria (microbes/microorganisms) break down (decompose / respire) the dead material • the bacteria use up all of the oxygen • oxygen concentration decreases • freshwater shrimp / living organisms cannot survive in anaerobic conditions (lack of oxygen) and will die (reduce in numbers) | (6) |
| Level | 0 | No rewardable content | |
| 1 | 1 - 2 | <ul style="list-style-type: none"> • a limited explanation of one stage of eutrophication. • the answer communicates ideas using simple language and uses limited scientific terminology • spelling, punctuation and grammar are used with limited accuracy | |
| 2 | 3 - 4 | <ul style="list-style-type: none"> • a simple explanation of two or three stages of how eutrophication can lead to a reduction in the number of living organisms. • the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately • spelling, punctuation and grammar are used with some accuracy | |
| 3 | 5 - 6 | <ul style="list-style-type: none"> • a detailed explanation of four or more stages of how eutrophication can lead to a reduction in the number of living organisms. • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors | |

Total for question 5 = 12 marks

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|---|--------------------|------|
| 6(a)(i) | <p>A suggestion to include two of the following:</p> <ul style="list-style-type: none"> it has features of both (a fish and amphibian) (1) it has gills (1) it has legs / feet (1) | | (2) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|---|--------------------|------|
| 6(a)(ii) | <input checked="" type="checkbox"/> A chordata | | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|--------|--|------|
| 6(a)(iii) | | <p>1 mark for each correct line</p> <p>If more than 1 line drawn from either box on the left then 0 marks for that box</p> | (2) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|---|--------------------|------|
| 6(a)(iv) | <input checked="" type="checkbox"/> C poikilothermic | | (1) |

| Question Number | Indicative Content | Mark |
|-----------------|--|---|
| QWC | <p>*6(b)</p> <p>A description including some of the following points:</p> <ul style="list-style-type: none"> • Animalia are multicellular • Animalia do not have cell walls/chlorophyll • Animalia feed heterotrophically / consume / eat • Plantae have cell walls • Plantae have chlorophyll • Plantae feed autotrophically / photosynthesise / makes own food • Plantae are multicellular • Fungi are multicellular / unicellular • Fungi feed saprophytically / lives on / decays • Fungi have cell walls • Fungi do not chlorophyll • Protocista are unicellular • Protocista have a nucleus • Prokaryotes are unicellular • Prokaryotes have no nucleus | (6) |
| Level | 0 | No rewardable content |
| 1 | 1 - 2 | <ul style="list-style-type: none"> • a limited description of at least one kingdom • the answer communicates ideas using simple language and uses limited scientific terminology • spelling, punctuation and grammar are used with limited accuracy |
| 2 | 3 - 4 | <ul style="list-style-type: none"> • a simple description of two or more kingdoms with at least two different features commented in one of them • the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately • spelling, punctuation and grammar are used with some accuracy |
| 3 | 5 - 6 | <ul style="list-style-type: none"> • a detailed description of at least four kingdoms • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors |

Total for question 6 = 12 marks

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