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Mark Scheme (Results)

Summer 2012

International GCSE
Biology (4BI0) Paper 2B

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Biology (KBI0) Paper 2B

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INTERNATIONAL GCSE BIOLOGY PAPER 2B – SUMMER 2012

Question number	Answer	Notes	Marks
1 (a)	sun/light makes vitamin D;		1
(b)	children still growing (bones) / developing (bones) / eq;	allow converse – adult bones fully developed ignore ref to cod liver oil / time spent indoors	1
(c)	fat / lipid; carbohydrate; protein; fibre / roughage; water; minerals / salts / ions;	only accept generic names, so iron = 0, glucose = 0 if list ignore non generic names	Max 3
(d)	1. idea of high in sugar / fat / carbohydrate / energy / calories 2. not used / not burnt / not needed / eq;	marks are for idea of energy balance and not consequence	2
(e)	1. obesity / overweight / joint damage; 2. diabetes; 3. heart disease / heart attack / angina / cardiac arrest / eq; 4. blocks/narrows/build up arteries / blocks blood vessels / high blood pressure; 5. stroke;	 ignore vein / capillary	Max 2
(f)	1. weigh crisp / mass of crisp; 2. burn crisp / eq; 3. burnt completely / eq; 4. heat water / hold (burning crisp) under tube / hold (burning crisp) under water / calorimeter / eq; 5. volume of water / mass of water; 6. measure temperature before and after / temperature rise / temperature increase / change in temperature / eq;	allow marks if clear in formula allow heat water if implicit	Max 4

Total 13 marks

Question number	Answer	Notes	Marks
2	nucleic; RNA / ribose nucleic acid; HIV / (human) immuno deficiency; immune; white / leukocyte / lymphocyte / eq; antibodies / antitoxins; vaccination / vaccine / inoculation / immunisation / eq;	ignore phagocytes	Max 7

Total 7 marks

Question number	Answer	Notes	Marks
3 (a) (i)	15;		1
(ii)	14 or 15;		1
(iii)	1. thermometer; 2. clinical / digital / mouth / ear / rectum / anus / armpit / eq;		2
(b) (i)	oestrogen;	allow estrogen / estradiol	1
(ii)	progesterone;		1
(iii)	blood / plasma;	allow blood vessel / blood stream	1
(iv)	1. breasts / mammary glands / nipples / eq; 2. body shape / wide hips / eq; 3. body hair / pubic hair / eq; 4. menstruation / period / menstrual cycle / ovulation / eq;	reject characteristics only shown by males ignore facial hair ignore voice ignore psychological changes ignore sex drive	2

Total 9 marks

Question number	Answer	Notes	Marks
4 (a) (i)	restriction (enzyme) / endonuclease;	ignore other words such as DNA or enzyme	1
(ii)	ligase;		1
(iii)	plasmid / virus / gene gun / eq;		1
(b)	gene/DNA/allele from different species / human genes in sheep / eq;	ignore foreign ignore organism / animal allow named examples such as spider to goat	1
(c)	1. genetically identical / same genes / same DNA / same alleles / <u>all</u> sheep have the gene / eq; 2. produce the protein / clotting agent / factor IX; 3. <u>more</u> (human) protein/clotting agent / mass production / eq; 4. more sheep / many sheep / faster (re)production of sheep / faster production of offspring / eq; 5. only have to do GM once / no need to repeat GM / eq;	ignore identical alone ignore non-clotting proteins such as antibodies ignore faster alone mark point is for sheep production	Max 3
(d) (i)	platelets;		1
(ii)	1. less blood loss / eq; 2. less entry of microbes / less entry of pathogens / less infection / less disease / eq;		2

Total 10 marks

<table>
<tr><th>Question number</th><th>Answer</th><th>Notes</th><th>Marks</th></tr>
<tr><td>5 (a) (i)</td><td>(student) 8 / eight;</td><td>any other student = 0
eg student 5 and student 8 = 0</td><td>1</td></tr>
<tr><td>(ii)</td><td>(rate) faster <u>when frightened</u>;
adrenalin(e);</td><td>allow epinephrine / noradrenaline</td><td>2</td></tr>
<tr><td>(iii)</td><td>yes: repeated/10/lots of people / similar pattern / eq;

OR

no: not enough people / one student not frightened / eq;</td><td>ignore answers that link to validity such as expecting to be frightened / age of students

reject not repeated</td><td>1</td></tr>
<tr><td>(b)</td><td><table><tr><th>Sentence</th><th>Label letter</th></tr><tr><td>the right atrium is</td><td>(B)</td></tr><tr><td>the chamber that pumps blood into the lungs is</td><td>A;</td></tr><tr><td>the chamber with the thickest muscle wall is</td><td>H;</td></tr><tr><td>the blood vessel containing blood at the highest pressure is</td><td>E;</td></tr><tr><td>the blood vessel carrying blood with the least oxygen into the heart</td><td>C;</td></tr></table></td><td></td><td>4</td></tr>
</table>

Total 8 marks

Question number	Answer	Notes	Marks
6 (a)	1. (nitrifying) bacteria; 2. ammonia/ammonium / into nitrites/NO_2 or nitrite into nitrate;	reject incorrect named bacteria such as nitrogen fixing allow Nitrosomonas / Nitrobacter ignore ammonia into nitrate	2
(b)	1. (root) nodules**;** 2. *Rhizobium* / nitrogen fixing bacteria; 3. <u>nitrogen</u> (gas) into nitrates / ammonia / ammonium; 4. amino acids / proteins**; (ONCE)** 5. growth / higher yield; 6. decomposition / decomposers / decay / rotting / eq**;** 7.(decomposing) bacteria / fungi / eq; 8. mineral (ions) / salts / nutrients / named mineral ion;	ignore fertiliser only allow point 8 if it is clear that the mineral ion has come from decomposition	Max 4
(c)	respiration; not all eaten; not all digested;		Max 2

Total 8 marks

Question number	Answer	Notes	Marks
7	1. emphysema; 2. less surface area / damage to alveoli / less alveoli / eq; 3. bronchitis / obstructive lung disease; 4. bacteria / infection; 5. cilia damaged / cilia stop moving / eq; 6. more mucus / build up of mucus / eq; 7. cancer / carcinogens / mutation; 8. tar;		Max 5

Total 5 marks

PAPER TOTAL: 60 MARKS

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