

Mark Scheme (Results)

Summer 2012

International GCSE
Biology (4BI0) Paper 2B

Edexcel Level 1/Level 2 Certificate
Biology (KBI0) Paper 2B

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information, please visit our website at www.edexcel.com.

Our website subject pages hold useful resources, support material and live feeds from our subject advisors giving you access to a portal of information. If you have any subject specific questions about this specification that require the help of a subject specialist, you may find our Ask The Expert email service helpful.

www.edexcel.com/contactus

Pearson: helping people progress, everywhere

Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2012

Publications Code UG031766

All the material in this publication is copyright

© Pearson Education Ltd 2012

INTERNATIONAL GCSE BIOLOGY PAPER 2B – SUMMER 2012

Question number	Answer	Notes	Marks
1 (a)	<u>sun/light</u> makes <u>vitamin D</u> ;		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 <u>high</u> 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 <u>arteries</u> / 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)	<p>1. genetically identical / same genes / same DNA / same alleles / <u>all</u> sheep have the gene / eq;</p> <p>2. produce the protein / clotting agent / factor IX;</p> <p>3. <u>more</u> (human) protein/clotting agent / mass production / eq;</p> <p>4. more sheep / many sheep / faster (re)production of sheep / faster production of offspring / eq;</p> <p>5. only have to do GM once / no need to repeat GM / eq;</p>	<p>ignore identical alone</p> <p> </p> <p>ignore non-clotting proteins such as antibodies</p> <p> </p> <p>ignore faster alone mark point is for sheep production</p>	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

Question number	Answer	Notes	Marks												
5 (a)	(i) (student) 8 / eight;	any other student = 0 eg student 5 and student 8 = 0	1												
	(ii) (rate) faster <u>when frightened</u> ; adrenalin(e);	allow epinephrine / noradrenaline	2												
	(iii) yes: repeated/10/lots of people / similar pattern / eq; OR no: not enough people / one student not frightened / eq;	ignore answers that link to validity such as expecting to be frightened / age of students reject not repeated	1												
(b)	<table border="1"> <thead> <tr> <th>Sentence</th> <th>Label letter</th> </tr> </thead> <tbody> <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> </tbody> </table>	Sentence	Label letter	the right atrium is	(B)	the chamber that pumps blood into the lungs is	A;	the chamber with the thickest muscle wall is	H;	the blood vessel containing blood at the highest pressure is	E;	the blood vessel carrying blood with the least oxygen into the heart	C;		4
Sentence	Label letter														
the right atrium is	(B)														
the chamber that pumps blood into the lungs is	A;														
the chamber with the thickest muscle wall is	H;														
the blood vessel containing blood at the highest pressure is	E;														
the blood vessel carrying blood with the least oxygen into the heart	C;														

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. <i>Rhizobium</i> / 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	<ol style="list-style-type: none">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. <u>more</u> mucus / <u>build up</u> of mucus / eq; 7. cancer / carcinogens / mutation;8. tar;		Max 5

Total 5 marks

PAPER TOTAL: 60 MARKS

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467

Fax 01623 450481

Email publication.orders@edexcel.com

Order Code xxxxxxxx Summer 2012

For more information on Edexcel qualifications, please visit our website
www.edexcel.com

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Ofqual




Llywodraeth Cynulliad Cymru
Welsh Assembly Government

