

Mark Scheme (Results) Summer 2010

IGCSE

IGCSE Biology (4325) Paper 2H

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Publications Code UG024189

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IGCSE BIOLOGY 4325/2H - SUMMER 2010

Question Number	Answer	Mark												
1	<table border="1"> <thead> <tr> <th>Feature</th> <th>Type of living organism</th> </tr> </thead> <tbody> <tr> <td>have cellulose cell walls</td> <td>(plants)</td> </tr> <tr> <td>all are parasitic and have a protein coat</td> <td>viruses;</td> </tr> <tr> <td>are microscopic and contain circular DNA</td> <td>bacteria;</td> </tr> <tr> <td>some have structures called hyphae</td> <td>fungi;</td> </tr> <tr> <td>cells have a nucleus but no cell wall</td> <td>animals;</td> </tr> </tbody> </table>	Feature	Type of living organism	have cellulose cell walls	(plants)	all are parasitic and have a protein coat	viruses;	are microscopic and contain circular DNA	bacteria;	some have structures called hyphae	fungi;	cells have a nucleus but no cell wall	animals;	(4)
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Question Number	Answer	Mark
2(a)	transfers/carries/takes pollen (by insects) / eq; (from anther) to stigma;	(2)

Question Number	Answer	Mark
2(b)(i)	first box ticked;	(1)

Question Number	Answer	Mark
2(b)(ii)	(sun)light / heat; Ignore sun alone photosynthesis; attract insects; enzymes;	max (2)

Question Number	Answer	Mark
2(c)	<p>Stems</p> <p>away / up / against gravity / negative geotropism; sun / light / carbon dioxide / photosynthesis;</p> <p>Roots</p> <p>toward gravity / down / positive geotropism; water / minerals / ions / named mineral ion / anchorage / nutrients / eq;</p>	(4)

Question Number	Answer	Mark
3(a)(i)	<p>A cell membrane controls what enters/leaves the cell / permeability / holds cell contents / engulf / eq;</p> <p>B cytoplasm (chemical) reactions / respiration / metabolism / synthesis / enzymes / eq;</p> <p>C nucleus; controls (cell activity) / contains DNA/genetic material / eq; Ignore brain</p>	(4)

Question Number	Answer	Mark
3(a)(ii)	digestion / breakdown; Ignore destroyed / killed / dissolves / eq; enzymes;	(2)

Question Number	Answer	Mark
3(b)	lymphocytes / memory cell / plasma cell; antibodies / antitoxins; clump bacteria/pathogen/microorganism / neutralise / eq; Ignore kill/destroy	max (2)

Question Number	Answer			Mark																					
4	<table border="1"> <thead> <tr> <th>condition</th> <th>symptom</th> <th>organ affected</th> </tr> </thead> <tbody> <tr> <td>emphysema</td> <td>poor gas exchange</td> <td>lung;</td> </tr> <tr> <td>cataract</td> <td>cloudy lens</td> <td>eye;</td> </tr> <tr> <td>Alzheimer's</td> <td>loss of memory</td> <td>brain / CNS;</td> </tr> <tr> <td>coeliac</td> <td>poor food absorption</td> <td>(small) intestine / duodenum / ileum; Ignore gut / large intestine</td> </tr> <tr> <td>arthritis</td> <td>swollen joints</td> <td>(bones)</td> </tr> <tr> <td>infertility</td> <td>lack of sperm</td> <td>testis / eq;</td> </tr> </tbody> </table>			condition	symptom	organ affected	emphysema	poor gas exchange	lung;	cataract	cloudy lens	eye;	Alzheimer's	loss of memory	brain / CNS;	coeliac	poor food absorption	(small) intestine / duodenum / ileum; Ignore gut / large intestine	arthritis	swollen joints	(bones)	infertility	lack of sperm	testis / eq;	(5)
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Question Number	Answer	Mark
7(a)	<p>Aa Aa;</p> <p>A a A a;</p> <p>AA Aa Aa aa;</p> <p>brown brown brown albino / 3 brown + 1 albino; allow normal as eq to brown</p> <p>Ignore not albino Ignore genotype descriptions</p>	(4)

Question Number	Answer	Mark										
7(b)(i)	<table border="1"> <thead> <tr> <th>parent genotypes</th> <th>number of albino offspring</th> </tr> </thead> <tbody> <tr> <td>homozygous dominant x homozygous dominant</td> <td>(none)</td> </tr> <tr> <td>heterozygous x homozygous recessive</td> <td>two / 2;</td> </tr> <tr> <td>heterozygous x heterozygous</td> <td>one / 1;</td> </tr> <tr> <td>homozygous recessive x homozygous recessive</td> <td>four / 4 / all;</td> </tr> </tbody> </table>	parent genotypes	number of albino offspring	homozygous dominant x homozygous dominant	(none)	heterozygous x homozygous recessive	two / 2;	heterozygous x heterozygous	one / 1;	homozygous recessive x homozygous recessive	four / 4 / all;	(3)
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Question Number	Answer	Mark
7(b)(ii)	<p>easily seen / not camouflaged / cannot hide / eq; predators / eaten / killed / do not survive / selected against / eq; less chance of mating / eq; allow converse</p>	<p>max</p> <p>(2)</p>

Question Number	Answer	Mark
8(a)(i)	46 / 23 <u>pairs</u> ;	(1)

Question Number	Answer	Mark
8(a)(ii)	female + XX / female + no Y / female + correct ref to 23 rd pair of chromosomes;	(1)

Question Number	Answer	Mark
8(b)(i)	idea of missing chromosome: less / 45 / not 46 / 22 pairs (+ 1) / not 23 pairs / one missing / one unpaired / not all paired / eq; identification of the missing chromosome; one X missing / one of the 23 rd pair missing / one sex chromosome / eq = 2	(2)

Question Number	Answer	Mark
8(b)(ii)	no Y;	(1)

Question Number	Answer	Mark
10(a)	<p>(control) diet / quality / frequency; (control) water quality / oxygen / temperature / waste / eq; (control) predation / nets / eq; (control) disease / parasites / antibiotics / pathogens; Ignore healthier fish</p> <p>selected species / strain / mass / guarantee quality / less variation / eq; Ignore more fish produced</p> <p>no need for boats / easier to catch / guaranteed harvest / eq;</p> <p>less depletion of (wild) fish / less overfishing / no risk of catching other species / eq;</p>	<p>max</p> <p>(3)</p>

Question Number	Answer	Mark
10(b)(i)	<p>bacteria / microorganisms / decomposers / eq; decomposition / decay / rot / eq; (less) oxygen; minerals / ions / salts / named mineral ion; Ignore nutrients algae / plants / <u>eutrophication</u>; less fish / death;</p>	<p>max</p> <p>(3)</p>

Question Number	Answer	Mark
10(b)(ii)	<p>affect food chains / webs / competition / less food for (wild) fish / eq; are predators / eat other organisms / eq; breed with wild fish / eq; spread disease / spread parasites / eq;</p>	<p>max</p> <p>(3)</p>

Question Number	Answer	Mark
11	<p>vasodilation; arterioles; (blood vessels) dilate / get wider / eq; (more) blood to skin / surface;</p> <p>(more) <u>sweat</u>; (more) evaporation / water loss / eq;</p> <p>(erector) muscles relax; hair flat / eq; (less) air trapped / less insulation / eq;</p> <p>cooling / heat loss / radiation / convection / eq;</p> <p>allow converse</p>	<p>max</p> <p>(6)</p>

Question Number	Answer	Mark
12(a)	single cell / one cell;	(1)

Question Number	Answer	Mark
12(b)(i)	small / microscopic / short distance; <u>large SA/vol ratio</u> ; diffusion;	max (2)

Question Number	Answer	Mark																		
12(b)(ii)	<table border="1"> <thead> <tr> <th>Substance</th> <th>Enter the blood from</th> <th>Carried by</th> </tr> </thead> <tbody> <tr> <td>glucose</td> <td>small intestine / ileum / duodenum / villi nephron / liver;</td> <td>plasma</td> </tr> <tr> <td>oxygen</td> <td>alveoli</td> <td>red (blood) cells / haemoglobin;</td> </tr> <tr> <td>adrenaline</td> <td>adrenal glands</td> <td>plasma;</td> </tr> <tr> <td>carbon dioxide / lactic acid;</td> <td>respiring muscle cells</td> <td>plasma</td> </tr> <tr> <td>urea</td> <td>liver;</td> <td>plasma</td> </tr> </tbody> </table>	Substance	Enter the blood from	Carried by	glucose	small intestine / ileum / duodenum / villi nephron / liver;	plasma	oxygen	alveoli	red (blood) cells / haemoglobin;	adrenaline	adrenal glands	plasma;	carbon dioxide / lactic acid;	respiring muscle cells	plasma	urea	liver;	plasma	(5)
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Question Number	Answer	Mark
13(a)(i)	python;	(1)

Question Number	Answer	Mark
13(a)(ii)	mongoose;	(1)

Question Number	Answer	Mark
13(b)(i)	reduce beetles / eat beetles / reduce pest / kill beetles / eq; increase (sugar cane) crop / stop beetles eating sugar cane / eq; reduce beetles that eat sugar cane = 2 because beetles eat sugar cane = 1	(2)

Question Number	Answer	Mark
13(b)(ii)	increase in number / reproduce / eq; eat other organisms / disrupt food chains / not enough beetles for other species to eat / eq; Ignore idea that more beetles eaten	(2)

Question Number	Answer	Mark
14(a)(i)	excretory / urinary / urinogenital / osmoregulatory / eq;	(1)

Question Number	Answer	Mark
14(a)(ii)	C bladder; B ureter; A urethra;	(3)

Question Number	Answer	Mark
14(b)	semen; Ignore sperm urine;	(2)

Question Number	Answer	Mark
14(c)	unwilling to donate / eq; need correct match / antigens / eq; allow ref to blood groups	(2)

Question Number	Answer	Mark																		
15(a)	<table border="1"> <thead> <tr> <th>Name of component</th> <th>Source</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>carbohydrate / starch; Ignore glucose and sugar</td> <td>pasta</td> <td>energy source</td> </tr> <tr> <td>lipid</td> <td>fish</td> <td>energy / insulation / eq;</td> </tr> <tr> <td>protein;</td> <td>meat</td> <td>synthesis of enzymes</td> </tr> <tr> <td>iron</td> <td>red meat</td> <td>haemoglobin / red (blood) cells;</td> </tr> <tr> <td>vitamin C;</td> <td>fruit / vegetables / eq;</td> <td>maintain healthy gums and prevent scurvy</td> </tr> </tbody> </table>	Name of component	Source	Function	carbohydrate / starch; Ignore glucose and sugar	pasta	energy source	lipid	fish	energy / insulation / eq;	protein;	meat	synthesis of enzymes	iron	red meat	haemoglobin / red (blood) cells;	vitamin C;	fruit / vegetables / eq;	maintain healthy gums and prevent scurvy	(6)
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Question Number	Answer	Mark
15(b)(i)	C H O / carbon + hydrogen + oxygen;	(1)

Question Number	Answer	Mark
15(b)(ii)	lipase; fatty acids / glycerol; bile; emulsification / large drops to small drops / increase surface area / optimum pH / neutralises acid;	max (3)

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17(a)	B;	(1)

Question Number	Answer	Mark
17(b)	C;	(1)

Question Number	Answer	Mark
17(c)	A and B (and C);	(1)

Question Number	Answer	Mark
17(d)	D;	(1)

Question Number	Answer	Mark
17(e)	A, B, C and D;	(1)

PAPER TOTAL: 120 MARKS

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