

Mark Scheme (Results) Summer 2010

IGCSE

IGCSE Science (Double Award) (4437) Paper 1F

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IGCSE SCIENCE DOUBLE AWARD 4437/1F - SUMMER 2010

Question Number	Answer	Mark
1(a)	C;	(1)

Question Number	Answer	Mark
1(b)	A;	(1)

Question Number	Answer	Mark
1(c)	C;	(1)

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

Question Number	Answer	Mark
1(e)	A;	(1)

Question Number	Answer	Mark
1(f)	B;	(1)

Question Number	Answer	Mark
1(g)	B;	(1)

Question Number	Answer	Mark
2(a)	line to insect A from both plant X and plant Y; Ignore direction of arrow heads line to insect B from plant Y + arrow head to insect;	(2)

Question Number	Answer	Mark
2(b)	decrease / reduce / get smaller / death / eq;	(1)

Question Number	Answer	Mark
3(a)(i)	D;	(1)

Question Number	Answer	Mark
3(a)(ii)	F;	(1)

Question Number	Answer	Mark
3(a)(iii)	E;	(1)

Question Number	Answer	Mark
3(a)(iv)	(stores) bile;	(1)

Question Number	Answer	Mark
3(b)	fatty acid;	(1)

Question Number	Answer	Mark
4	carbon dioxide (<i>from the air</i>); light energy (<i>from the sun</i>); water (<i>from the soil</i>); starch (<i>storage product</i>); oxygen (<i>is released back into the air</i>);	(5)

Question Number	Answer	Mark
5(a)	bronchiole;	(1)

Question Number	Answer	Mark
5(b)	heart;	(1)

Question Number	Answer	Mark
5(c)	glucose/ $C_6H_{12}O_6$; + oxygen/ O_2 ; either way \longrightarrow (<i>carbon dioxide</i>) + water/ H_2O ; + (<i>energy</i>)	(3)

Question Number	Answer	Mark
5(d)	large surface area / lots / many; thin / one cell thick; moist; close to capillaries;	(2)

Question Number	Answer	Mark
6(a)	sensory / motor / nerves / neurones;	(1)

Question Number	Answer	Mark
6(b)	brain;	(1)

Question Number	Answer	Mark
6(c)(i)	A retina; B optic nerve;	(2)

Question Number	Answer	Mark
6(c)(ii)	(ciliary muscle) contract / shorten / eq; (lens) fatter / eq;	(2)

Question Number	Answer	Mark
6(d)	adrenaline;	(1)

Question Number	Answer	Mark
7	pancreas; glucose / (excess) sugar; bacteria; fermenter / bioreactor;	(4)

Question Number	Answer	Mark
8(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
8(a)(ii)	digestion / breakdown; Ignore destroyed / killed / dissolves / eq; enzymes;	(2)

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

Question Number	Answer			Mark																					
9	<table border="1"> <thead> <tr> <th data-bbox="328 331 528 432">condition</th> <th data-bbox="528 331 847 432">symptom</th> <th data-bbox="847 331 1235 432">organ affected</th> </tr> </thead> <tbody> <tr> <td data-bbox="328 432 528 539">emphysema</td> <td data-bbox="528 432 847 539">poor gas exchange</td> <td data-bbox="847 432 1235 539">lung;</td> </tr> <tr> <td data-bbox="328 539 528 640">cataract</td> <td data-bbox="528 539 847 640">cloudy lens</td> <td data-bbox="847 539 1235 640">eye;</td> </tr> <tr> <td data-bbox="328 640 528 741">Alzheimer's</td> <td data-bbox="528 640 847 741">loss of memory</td> <td data-bbox="847 640 1235 741">brain / CNS;</td> </tr> <tr> <td data-bbox="328 741 528 880">coeliac</td> <td data-bbox="528 741 847 880">poor food absorption</td> <td data-bbox="847 741 1235 880">(small) intestine / duodenum / ileum; Ignore gut / large intestine</td> </tr> <tr> <td data-bbox="328 880 528 981">arthritis</td> <td data-bbox="528 880 847 981">swollen joints</td> <td data-bbox="847 880 1235 981">(bones)</td> </tr> <tr> <td data-bbox="328 981 528 1088">infertility</td> <td data-bbox="528 981 847 1088">lack of sperm</td> <td data-bbox="847 981 1235 1088">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
11(a)(i)	competition / compete; minerals / named mineral / nutrient; water; light; carbon dioxide; Ignore space	max (2)

Question Number	Answer	Mark
11(a)(ii)	herbicide / weedkiller / chemical that kills / pull them out / biological control / pesticide / eq; Ignore ploughing / fertiliser / chemicals	(1)

Question Number	Answer	Mark
11(b)(i)	less leaf / less area / less surface / less chloroplasts / less chlorophyll / eq; Ignore eat/feed (less) light trapped / eq; (less) photosynthesis;	(2)

Question Number	Answer	Mark
11(b)(ii)	pesticide / insecticide; biological control / introduce predator/parasite / pheromones / sterile males / eq; GM;	(2)

Question Number	Answer	Mark
12(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										
12(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
12(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>

PAPER TOTAL: 75 MARKS

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