

# Mark Scheme (Results) Summer 2008

GCE

GCE O Level Biology

7040/01



7040 / 01 Paper 1 Mark Scheme - June 2008

Question Number	Answer	Mark																																		
1	<table border="1"> <thead> <tr> <th rowspan="2">Characteristic</th> <th colspan="4">Type of organism</th> </tr> <tr> <th>Bacteria</th> <th>Plant</th> <th>Fungi</th> <th>Animal</th> </tr> </thead> <tbody> <tr> <td>Are multicellular</td> <td>never</td> <td>always</td> <td>sometimes</td> <td>always:</td> </tr> <tr> <td>Contain chloroplasts</td> <td>sometimes</td> <td>always</td> <td>never</td> <td>never;</td> </tr> <tr> <td>Have cell walls</td> <td>always</td> <td>always</td> <td>always</td> <td>never;</td> </tr> <tr> <td>Are able to move from one place to another</td> <td>sometimes</td> <td>never</td> <td>never</td> <td>sometimes;</td> </tr> <tr> <td>Example</td> <td>Lactobacillus /eq.;</td> <td>Maize / eq;</td> <td>yeast</td> <td>Human/ eq;</td> </tr> </tbody> </table>	Characteristic	Type of organism				Bacteria	Plant	Fungi	Animal	Are multicellular	never	always	sometimes	always:	Contain chloroplasts	sometimes	always	never	never;	Have cell walls	always	always	always	never;	Are able to move from one place to another	sometimes	never	never	sometimes;	Example	Lactobacillus /eq.;	Maize / eq;	yeast	Human/ eq;	(7)
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(Total 7 marks)

Question Number	Answer	Mark
2	Water; Plasma; Lower/smaller/eq; Pituitary; Collecting duct; Less; More/greater/eq; Less/ reduced/dilute/eq;	(8)

(Total 8 marks)

Question Number	Answer	Mark
3(a)	dominant allele is always expressed /eq; recessive allele is hidden (in heterozygote) / only expressed in homozygote/eq;	(2)

Question Number	Answer	Mark															
3(b)(i)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Father</th> <th>Mother</th> </tr> </thead> <tbody> <tr> <td>Genotype of parents</td> <td style="text-align: center;">Aa</td> <td style="text-align: center;">aa;</td> </tr> <tr> <td>Gametes</td> <td style="text-align: center;">A or a</td> <td style="text-align: center;">a;</td> </tr> <tr> <td>Genotypes of children</td> <td style="text-align: center;">Aa</td> <td style="text-align: center;">aa;</td> </tr> <tr> <td>Phenotypes of children</td> <td style="text-align: center;">Achondroplasic /eq</td> <td style="text-align: center;">normal height /eq;</td> </tr> </tbody> </table>		Father	Mother	Genotype of parents	Aa	aa;	Gametes	A or a	a;	Genotypes of children	Aa	aa;	Phenotypes of children	Achondroplasic /eq	normal height /eq;	(4)
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Question Number	Answer	Mark
3(b)(ii)	50% chance of producing Achondroplasic baby / 50% chance of having normal child; can have embryo testing / cv screening / amniocentesis / genetic test/eq;	Max(2)

(Total 8 marks)

Question Number	Answer	Mark
4(a)	(movement of) water; dilute solution to a more concentrated solution / eq; partially permeable membrane / eq;	(3)

Question Number	Answer	Mark
4(b)(i)	water leaves; lower conc. of solution inside red cells / eq; cells shrink/become spiky / crenate /eq;	Max (2)

Question Number	Answer	Mark
4(b)(ii)	cells burst /eq;	(1)

Question Number	Answer	Mark
4(b)(iii)	same conc. of solution inside and outside red cells / isotonic /eq; no osmosis / movement of water / eq;	(2)



Question Number	Answer	Mark
6(a)	Carbon / C; Hydrogen / H; Oxygen / O;  <b>Notes</b> Minus 1 mark for each additional incorrect element	(3)

Question Number	Answer	Mark
6(b)	Benedict's / eq; heat; red / orange / green;	(3)

Question Number	Answer	Mark
6(c)	haemoglobin ; red blood cell / prevent anaemia; oxygen transport / eq;	(2)

Question Number	Answer	Mark
6(d)(i)	for respiration; for energy; movement / active transport/ muscle contraction / converted to glycogen/ fat /eq;	(2)

Question Number	Answer	Mark
6(d)(ii)	prevent blood sugar dropping/ eq; stop feeling tired / maintain concentration/ eq; provide energy;	(2)

(Total 12 marks)

Question Number	Answer	Mark															
7(a)(i)	1 mark for each answer placed in the correct box.																
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		(7)															

Question Number	Answer	Mark
7(a)(ii)	carbon dioxide / CO <sub>2</sub> ; oxygen/ O <sub>2</sub> ; water / H <sub>2</sub> O;	
		(2)

Question Number	Answer	Mark
7(b)	flat/thin/eq; (relatively) high SA ; High SA / Vol ratio ( = 2 marks );; diffusion ; no cell far from the surface (of organism); not very active (so less need for exchange);	
		Max (4)

(Total 13 marks)



Question Number	Answer	Mark
8(a)(i)	Sand eel;	(1)

Question Number	Answer	Mark
8(a)(ii)	Sunlight / sun / light;	(1)

Question Number	Answer	Mark
8(b)	Diagram to include:  shape; 5 boxes names in order;	(3)

Question Number	Answer	Mark
8(c)	energy lost / not all / only 10 % / reaches next level/ eq; movement / excretion/egestion /uneaten/eq; respiration occurs; too little energy left at top;	(3)

(Total 8 marks)

Question Number	Answer	Mark
9(a)	<p>pollution;  can harm other organisms / ecosystem ;  affect or alter food chain / food web /eq. ;  bioaccumulation / eq. ;  toxic to humans / eq. ;</p>	(2)

Question Number	Answer	Mark
9(b)(i)	<p>using an organism/ predator/ eq;  to kill pest / feed on / eat / remove /eq;</p>	(2)

Question Number	Answer	Mark
9(b)(ii)	<p>suitable pest e.g. greenfly and named predator  e.g. ladybird;</p>	(1)

(Total 5 marks)

Question Number	Answer	Mark
10(a)	transfer of pollen /eq; anther to the stigma; different flower/different plant / eq;	Max (2)

Question Number	Answer	Mark
10(b)(i)	anthers lower in pin/ anthers higher in thrum /eq; stigma higher in pin / style longer /eq.; R stigma longer/ tall	(2)

Question Number	Answer	Mark
10(b)(ii)	Insect picks up pollen / eq; from anthers at top of thrum / anthers low in pin; deposit pollen on stigma at top of pin / low in thrum;	(2)

Question Number	Answer	Mark
10(b)(iii)	allows for exchange of alleles / genetic material /eq.; increases variation / eq.; reduces chance of harmful gene combinations/eq; enables plant to evolve / improve / change /adapt /eq.;	(2)

Question Number	Answer	Mark
10(c)(i)	anthers higher than pin / eq;  stigma higher than thrum / longer style eq;  anthers and stigma are at same height; ONCE	(2)

Question Number	Answer	Mark
10(c)(ii)	self-pollination / described;	(1)

(Total 11 marks)

Question Number	Answer	Mark
11(a)(i)	gravity; light / sunlight / sun;	(2)

Question Number	Answer	Mark
11(a)(ii)	Positive / +ve / towards; phototropic / phototropism / light / sun / sunlight;  negative/ -ve / away from / against/ upwards; gravitropic / geotropic / gravity;	(4)

Question Number	Answer	Mark
11(b)	growth response / muscle contraction; chemical/ auxin/ eq. electrical / impulse; diffusion / neurones / nerves / nervous;	(3)

(Total 9 marks)

(Total for paper: 100 marks)