

IGCSE Biology 4325 2H Mark Scheme (Results) Summer 2008

IGCSE

IGCSE Biology 4325 2H

IGCSE BIOLOGY 4325-2H MARK SCHEME

Key

- ; indicates separate mark points
 / indicates alternatives
 eq allow for correct equivalent
 word underlined means no alternatives allowed

Question Number	Correct Answer	Acceptable Answers	Reject	Mark															
1	<table border="1"> <thead> <tr> <th>Type of organism</th> <th>Example</th> <th>Multicellular</th> </tr> </thead> <tbody> <tr> <td>plants</td> <td>maize / eq;</td> <td>YES</td> </tr> <tr> <td>animals</td> <td>human / eq;</td> <td>YES;</td> </tr> <tr> <td>bacteria</td> <td><i>Lactobacillus</i></td> <td>NO;</td> </tr> <tr> <td>viruses</td> <td>influenza / HIV / AIDS / TMV / eq;</td> <td>NO</td> </tr> </tbody> </table>	Type of organism	Example	Multicellular	plants	maize / eq;	YES	animals	human / eq;	YES;	bacteria	<i>Lactobacillus</i>	NO;	viruses	influenza / HIV / AIDS / TMV / eq;	NO			(5)
Type of organism	Example	Multicellular																	
plants	maize / eq;	YES																	
animals	human / eq;	YES;																	
bacteria	<i>Lactobacillus</i>	NO;																	
viruses	influenza / HIV / AIDS / TMV / eq;	NO																	

(Total 5 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
2 (a)	<p>access / transport / travel / communication;</p> <p>trees for a purpose / construction / manufacture / logging / eq;</p> <p>trees for fuel;</p> <p>farming / mining;</p>			Max 2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
2 (b)	<p>loss of habitat / food;</p> <p>loss of numbers / death / extinction / loss of genes / migration / loss of species / eq;</p> <p>less photosynthesis;</p> <p>global warming / greenhouse effect / ref to CO₂ in air;</p> <p>soil erosion idea / <u>leaching</u>;</p> <p>flooding / eutrophication / desertification / lack of minerals / eq;</p> <p>less transpiration;</p> <p>less rainfall;</p>			Max 4 (4)

(Total 6 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
3 (a)(i)	anther / stamen / pollen sac;			1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
3 (a)(ii)	drawn to anther only (not to filament);			1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
3 (a)(iii)	pollen; from <u>anther/P</u> to <u>stigma</u> ;			2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
3 (b)	light / gravity;	sun / sunlight;	phototropism / geotropism	1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
3 (c)(i)	carbon dioxide + water; (or opposite) glucose + oxygen; (or opposite) ignore light / chlorophyll	chemical symbols;;		2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
3 (c)(ii)	thin; large surface area; stomata; air spaces / spongy (mesophyll);		pores / guard cells	Max 2 (2)

(Total 9 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
4 (a)	heart rate increases; until 50 mins / 124; then levels off / falls;			Max 2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
4 (b)	adrenaline;			1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
4 (c)	higher heart rate / higher rate sooner / eq; nicotine / narrows arteries / releases adrenaline / raises blood pressure;			2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
4 (d)	breathing / respiratory / nervous / reproductive / digestive / endocrine;			1 (1)

(Total 6 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
5	mouth / saliva; mechanical digestion / chewing / mastication / eq; amylase; ONCE Ignore carbohydrase (starch to) maltose; pancreas / pancreatic juice / eq; small intestine / duodenum / ileum; starch/maltose to glucose; maltase;			Max 6 (6)

(Total 6 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
8 (a)	magnesium;	Mg;		1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
8 (b)	$3.6 / 5.4 \times 100 = 66.7$; Accept 66.67 / 66.6666etc one for 3.6	66 and two thirds;		2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
8 (c)	all / extra / increase / more mineral ions / more named mineral / correct amount / eq; use or purpose;	nutrients		2 (2)

(Total 5 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
9 (a)(i)	X = cell body / nucleus / eq; Y = myelin / sheath / fat / fatty sheath / axon / cell membrane / Schwann cell;			2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
9 (a)(ii)	B / sensory / eq;			1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
9 (a)(iii)	A / relay / eq;			1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
9 (b)(i)	axis correct; axes labelled speed and diameter;			2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
9 (b)(ii)	as diameter increases speed of impulse increases / linear / proportional / eq;	proportional;		1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
9 (b)(iii)	34 /read from graph;			1 (1)

(Total 8 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
10 (a)(i)	Dd and Dd; DD, Dd, Dd, and dd; (any order)			2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
10 (a)(ii)	3:1 / 75:25 / 75% to 25% / 3 quarters to 1 quarter / eq;			1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
10 (a)(iii)	zero; both parents must be DD / dd parents are sterile / neither parent has d/recessive allele; Ignore term gene			2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
10 (b)	bigger surface area to volume ratio; lack insulation/fat; lose (more) heat; maintain body temperature; respiration;			Max 2 (2)

Question Number	Correct Answer				Acceptable Answers	Reject	Mark
10 (c)	Hormone	Endocrine gland	Target organ	Effect			
	(adrenaline)	(adrenal)	(heart)	increase rate / eq;			
	(oestrogen)	ovary;	uterus / womb;	(repair lining)			
							(3)

(Total 10 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
11 (a)	glucose / C ₆ H ₁₂ O ₆ ; carbon dioxide/CO ₂ + ethanol/alcohol/ C ₂ H ₅ OH; Ignore energy	chemical symbols		2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
11 (b)(i)	gene / DNA / allele (for enzyme); cut; restriction / endonuclease; plasmid / vector / gene gun / phage / virus; ligase; gene / DNA / allele <u>into yeast</u> ;			Max 4 (4)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
11 (b)(ii)	enzyme / amylase; digests starch / less starch / starch to sugar;			2 (2)

(Total 8 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark										
12	<table border="1"> <thead> <tr> <th>Process</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>decomposition</td> <td>bacteria / microorganisms / fungi / saprobionts / eq; breakdown/digest dead organisms / organic matter / waste / eq;</td> </tr> <tr> <td>transpiration</td> <td>evaporation / diffusion / loss of water; from plant / leaf / stomata;</td> </tr> <tr> <td>nitrification</td> <td>bacteria / named bacteria; ammonia/ammonium (cpds) to nitrite/nitrate / nitrite to nitrate;</td> </tr> <tr> <td>vasodilation</td> <td>widening / eq; I dilation blood vessels / arteries / arterioles; I capillaries</td> </tr> </tbody> </table>	Process	Description	decomposition	bacteria / microorganisms / fungi / saprobionts / eq; breakdown/digest dead organisms / organic matter / waste / eq;	transpiration	evaporation / diffusion / loss of water; from plant / leaf / stomata;	nitrification	bacteria / named bacteria; ammonia/ammonium (cpds) to nitrite/nitrate / nitrite to nitrate;	vasodilation	widening / eq; I dilation blood vessels / arteries / arterioles; I capillaries			(8)
	Process	Description												
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vasodilation	widening / eq; I dilation blood vessels / arteries / arterioles; I capillaries													
			veins											

(Total 8 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
13 (a)(i)	energy / insulation / cell membranes / neurones / growth / making new cells /eq;	keep warm / eq		1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
13 (a)(ii)	bones / teeth / skeleton;			1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
13 (b)	respiration / heat / excretion / egestion / movement / uneaten / indigestible;;			Max 2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
13 (c)	nitrates / mineral ion(s) / named mineral ion(s) / eq; growth of plants / algal bloom; <u>eutrophication</u> ; light blocked / less photosynthesis; death of organisms (plant/fish); bacteria / microorganisms / eq; oxygen depletion /eq; respiration;			Max 5 (5)

(Total 9 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
14 (a)	Person	BMI value	Description of weight	TE for wrong BMI but correct description = 1 (2)
	A	(24.2)	(normal weight)	
	B	29.6	overweight	
	C	39.6;	obese;	

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
14 (b)	higher / greater / increase / eq;			1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
14 (c)(i)	more risk for men up to 28 / similar risk up to 28 / eq; more risk for women (than men) above 28; more risk for men and women above 28; more risk as BMI increases;	allow higher BMI/overweight as eq to 28		2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
14 (c)(ii)	<u>coronary</u> artery; fat/cholesterol blocks/deposits; (aerobic to) <u>anaerobic</u> ; (less) oxygen; (less) glucose; less respiration / less energy / ATP; lactic acid; builds up / toxic / inhibit enzymes / eq;			Max 5 (5)

(Total 10 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
15 (c)(i)	less pressure / flow speed; larger lumen / eq; closer to surface / easier to see / eq; thinner wall / easier to penetrate;	converse		Max 2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
15 (c)(ii)	diffusion; high conc. to low conc. / conc.gradient;			2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
15 (c)(iii)	urea; carbon dioxide; water;		toxins / hormones / glucose / lactic acid	Max 2 (2)

(Total 17 marks)

PAPER TOTAL 120 MARKS