

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	Correct Answ	ver		Acceptable	Reject	Mark
Number				Answers		
1						
	Type of organism	Example	Multicellular			
	plants	maize / eq;	YES			
	animals	human / eq;	YES;			
	bacteria	Lactobacillus	NO;			
	viruses	influenza / HIV / AIDS / TMV / eq;	NO			
						(5)

(Total 5 marks)

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

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

(Total 6 marks)

Question Number	Correct Answer		Acceptal Answers	ole	Reject	Mark
3 (a)(i)	anther / stamen / pollen sac;					1 (1)
Question Number	Correct Answer		Acceptal Answers	ole	Reject	Mark
3 (a)(ii)	drawn to anther only (not to filament);					1 (1)
					Б	
Question Number	Correct Answer		Acceptal Answers	oie	Reject	Mark
3 (a)(iii)	pollen; from anther/P to stigma;					2
						(2)
0	Comment Assessed	Ι Λ -		D -	!4	NA
Question Number	Correct Answer		cceptable swers		ject	Mark
3 (b)	light / gravity;		n / nlight;		ototropism geotropism	1 (1)
· ·					· · · ·	
Question Number	Correct Answer		Acceptal Answers	ole	Reject	Mark
3 (c)(i)	carbon dioxide + water; (or opposite)		chemica symbols;			2
	glucose + oxygen; (or opposite) Ignore light / chlorophyll		3311100137	′		(2)
Question Number	Correct Answer		Acceptal Answers	ole	Reject	Mark
3 (c)(ii)	thin;				pores /	Max 2
	large surface area;				guard	(0)
	stomata;				cells	(2)

air spaces / spongy (mesophyll);

(Total 9 marks)

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

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

(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;			Max 6
	pancreas / pancreatic juice / eq; small intestine / duodenum / ileum; starch/maltose to glucose; maltase;			(6)

(Total 6 marks)

Question	Correct Answer	Acceptable	Reject	Mark
Number		Answers		
6	vena cava; atrium / auricle; lung; valves; aorta; hepatic; glucose / sugar; glycogen;			8 (8)

(Total 8 marks)

Question Number	Correct Answer		Acceptable Answers	Reject	Mark
7 (a)	Step	Order of step	all 4 = 3;;;		Max 3
	repeat crosses for several generations	4	2 correct = 2;;		
	cross parent plants to produce more offspring	2	1 correct = 1;		
	identify parent plants with desired characteristics	1			
	select offspring with desired characteristics	3			(3)

Question	Correct Answer	Acceptable	Reject	Mark
Number		Answers		
7 (b)	large numbers; quickly produced; identical / all have desired characteristic / cloned / eq;			Max 2
	·			(2)

(Total 5 marks)

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

Question	Correct Answer	Acceptable	Reject	Mark
Number		Answers		
8 (b)	3.6 / 5.4 x 100 = 66.7;; Accept	66 and two		2
	66.67 / 66.6666etc	thirds;		
	one for 3.6			
				(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	Correct Answer	Acceptable	Reject	Mark
Number		Answers		
9 (a)(i)	<pre>X = cell body / nucleus / eq; Y = myelin /sheath / fat / fatty sheath / axon / cell membrane / Schwann cell;</pre>			2 (2)

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

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

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

(Total 8 marks)

Question	Correct Answer	Acceptable	Reject	Mark
Number		Answers		
10 (a)(i)	Dd and Dd;			2
	DD, Dd, Dd, and dd; (any order)			
	_			(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	Correct Answer	Acceptable	Reject	Mark
Number		Answers		
10 (b)	bigger surface area to volume ratio; lack insulation/fat; lose (more) heat; maintain body temperature;			Max 2
	respiration;			(2)

Question	Correct Answ	er			Acceptable	Reject	Mark
Number					Answers		
10 (c)							
	Hormone	Endocrine	Target	Effect			
		gland	organ				
	(adrenaline)	(adrenal)	(heart)	increase			
				rate /			
				eq;			
	(oestrogen)	ovary;	uterus	(repair			
			/	lining)			(3)
			womb;				(0)

(Total 10 marks)

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

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

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

(Total 8 marks)

Question	Correct Answer		Acceptable	Reject	Mark
Number			Answers		
12					
	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			(8)
		blood vessels / arteries / arterioles; I capillaries		veins	

(Total 8 marks)

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

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

(Total 9 marks)

Question Number	Correct Ansv	ver		Acceptable Answers	Reject	Mark
14 (a)				TE for		
	Person	BMI	Description	wrong BMI		
		value	of weight	but		
	Α	(24.2)	(normal	correct		
			weight)	description		
	В	29.6	overweight	= 1		
	С	39.6;	obese;			
	•					(2)

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

(Total 10 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
15 (a)	location; (Bowman's capsule / glomerulus) pressure used;	converse		Max 3
	no energy/ATP required / no active transport;			
	molecules out of blood / into nephron / eq;			(3)
	depends on molecule size / eq;			
	hormones not involved;			

Question Number	Correct Ans	wer		Acceptable Answers	Reject	Mark
15 (b)(i)	Event	Volume of urine (large or small)	Concentration of urine (dilute or concentrated)			
	after doing lots of exercise	small;	(concentrated)			
	after eating lots of protein	(small)	concentrated;			
	after drinking lots of water	large	dilute;			
	after eating salty crisps	small	concentrated;			(4)

Question	Correct Answer	Acceptable	Reject	Mark
Number		Answers		
15 (b)(ii)	(less) water reabsorbed;	ADH story		4
	collecting duct;	in		
	ref permeability;	converse		
	more loss of water / more water in			
	urine / more urine / dilute urine /			(4)
	dehydration / blood concentration			
	<u>increases</u> ;			

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