OCR GCSE 21ST CENTURY BIOLOGY B · J257

BIOLOGY



MARK SCHEME

B5.6 WHAT CAN HAPPEN WHEN ORGANS AND CONTROL SYSTEMS STOP WORKING? (HIGHER)

SCORE	PERCENTAGE
/35	%

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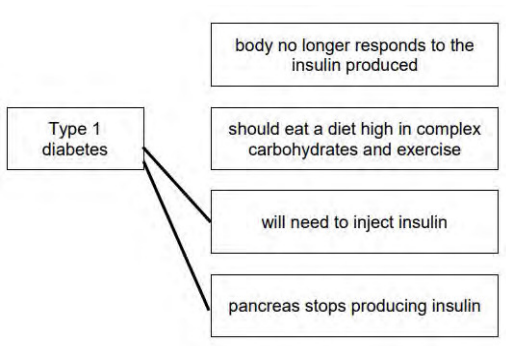
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Question			Answer/Indicative content	Marks	Guidance
1		i	**Any one from** *Descriptions* **1.** Person B sugar level falls faster / person A sugar level falls more slowly ✓ **2.** Person B sugar level falls back to starting level after just over 2 hours / Person A sugar level remains high ✓ **Any one from** *Reasons why* **3.** Person A does not respond to the hormone / insulin produced to convert sugar to glycogen ✓ **4.** Person B produces a hormone / insulin in response to the rise in blood sugar and this causes cells to convert the sugar to glycogen so the level falls ✓	2	Max 1 for description and max 1 for the reason why MPs 3 and 4 **DO NOT ALLOW** a reference to hormone response or lack of response without reference to the role of insulin.
		ii		2	If more than 2 lines are drawn, delete one mark for each incorrect line
			Total	**4**	
2		i	Cornea – responsible for bending the light ✓ Light rays will no longer meet on the retina so sight will be poor ✓	2	**ALLOW** reference to blindness
		ii	An unspecialised cell which can become any cell type ✓	1 1	
		iii	**Any one from**Embryos killed in the process ✓Embryos could be a life ✓ **Total**	 **4**	
3	a	i	Explanation of what Nikita needs i.e. more ~~convergence~~ ✓	2	
			Lens A gives more convergence / lens B does not ✓		

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Question			Answer/Indicative content	Marks	Guidance
		ii	Lens thinner at centre rather than edges ✓ Therefore it will diverge ✓ Therefore the defective lens must converge light rays too much ✓ Therefore the eye defect is short sight ✓	4 4	
	b		Rays converge ✓ But do not meet ✓	2	
	c		**Any four from**Damaged tissue difficult to get to ✓Treatment might damage other areas ✓Nervous tissue high **Total**	 **12**	

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Question			Answer/Indicative content	Marks	Guidance
4	a		Person A 84 – 90 mins; Person B 60 mins;	1	Both answers for 1 mark Examiner's Comments Most candidates managed to score the mark for this question. Examiners allowed a wide range of 84 to 90 minutes for person A in order to ensure that any reasonable answer was credited.
	b		Any three of from A; B starts to drop before A; B glucose dropped / removed more quickly; B returns to start / normal level;	3	ORA Ignore reference to numbers - refers to rate of drop Ignore constant / steady Ignore idea that A does not return to start Examiner's Comments This question proved to be more challenging. Candidates were asked to state how the level differed between the two people. A common failing was simply to state what was happening to one of the individuals rather than compare the two.
	c		B is healthy / A is unhealthy; A is diabetic / B is not diabetic; (Correct reference to) insulin;	3	Examiner's CommentsSome candidates failed to re was a three mark question and consequently needed three conclusions. Good answers included the idea that A was a diabetic, produced too little insulin and that B was healthy.
	d		The observation increases the likelihood / confidence in the prediction; But does not necessarily prove it is correct;	2	Ignore prediction is correct Ignore reinforces / supports / strengthens Examiner's Comments Good answers referred to increasing confidence in the prediction but not necessarily proving that the prediction was correct. However this question was not answered well by most candidates. Answers that stated that it proved the prediction was correct did not score.
			Total	9	

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Question			Answer/Indicative content	Marks	Guidance
5	a		take vitamin supplements: ☐ have a high fibre diet: ✓ eat more protein: ☐ increase energy (food) intake: ☐ eat more complex carbohydrates: ✓ take mineral supplements: ☐	2	3 ticks = 1 mark max. 4 or more ticks = 0 marks **Examiner's Comments** Approximately half of the candidates scored both marks for this question. Correct answers referred to a high fibre diet and eating more complex carbohydrates.
	b		C A B	2	3 correct = 2 marks 2 or 1 correct = 1 mark **Examiner's Comments** This question was answered very well by the majority of candidates. Errors were few but when they did occur is was nearly always to transpose fibre with carbohydrate. This scored candidates one of the two marks available.
	c		Insulin in tablets enters the blood stream too quickly.: ☐ Tablets are more likely to cause infection.: ☐ Insulin in tablets is more likely to cause an overdose.: ☐ Insulin in injections will work faster.: ✓ Insulin is injected straight into the pancreas.: ☐ Insulin in tablets is likely to be digested and broken down.: ✓	2	3 ticks = 1 mark max. 4 or more ticks = 0 marks **Examiner's Comments** This question was answered well with almost all candidates scoring at least one of the two marks available. When errors did occur they were randomly spread across the other distractors.
			Total	6	

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