

Controlling Blood Glucose 2

QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS								
a)	pancreas	allow phonetic spelling	1								
a)ii)	(increases movement of) glucose into cells / organs / named	allow (glucose) converted to glycogen / fat allow (glucose) used in (increased) respiration do not allow hybrid spellings of glycogen	1								
b)	<table border="1"> <thead> <tr> <th>Type of diabetes</th> <th>Treatment</th> </tr> </thead> <tbody> <tr> <td>Type 1</td> <td>Careful attention to diet only</td> </tr> <tr> <td>Type 2</td> <td>Careful attention to diet and injection of insulin</td> </tr> <tr> <td></td> <td>Injection of insulin only</td> </tr> </tbody> </table>	Type of diabetes	Treatment	Type 1	Careful attention to diet only	Type 2	Careful attention to diet and injection of insulin		Injection of insulin only	1 mark per correct line extra line from a type of diabetes cancels the mark	2
Type of diabetes	Treatment										
Type 1	Careful attention to diet only										
Type 2	Careful attention to diet and injection of insulin										
	Injection of insulin only										
c)i)	protein		1								
c)ii)	gene / allele		1								
c)iii)	any three from: <ul style="list-style-type: none"> • (amino acids) broken down / converted • (amino acids) form / into urea • (break down / convert / urea formed) in liver • (urea / broken down amino acids) removed / filtered by kidney • (urea / broken down amino acids) in urine • (urine / urea / broken down amino acids) stored / held in bladder 	max 2 if any one process goes on in the wrong organ	3								
Total marks			9								

QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	pancreas	allow phonetic spelling	1
b)	4(.0) to 7.2 or 7.2 to 4(.0)		1
c)	13-7=6 6/2 = 3 units increase (dose)	working shows 6 = 1 mark accept the correct answer to the calculation, 3 units, for 2 marks, irrespective of working accept indication of increase, eg extra / more / + could be in working lines	1 1 1
Total marks			5

QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	pancreas		1
b)	protease		1
c)i)	(same) enzymes / named enzymes produced in other parts / named parts of digestive system	if named, enzymes and part must be correct	1 1
c)ii)	diet / activity varies / amount of glucose in blood varies	accept too much insulin leads to coma / hypo / low blood sugar accept too little insulin leads to coma / hyper / high blood sugar	1
d)	any two from: pros ☐ less / no experimentation on humans ☐ dogs (more) similar to humans (than lower / named organisms) ☐ it allows us to find a treatment or improves medical understanding cons ☐ harmful / cruel to dogs ☐ dogs may not be (metabolically) like humans conclusion justified by argument	accept allows us to find a cure accept kills dogs	2
Total marks			7

QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
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a)i)	50	award 2 marks for correct answer irrespective of working award 1 mark for selection of 60 and 10	2
a)ii)	any two from: ☑increases ☑(then) decreases ☑ highest at 65 – 74 (years old) or maximum 112 (per thousand)	ignore comparisons with men allow peaks at 65 - 74	2
b)i)	stomach		1
b)ii)	any sensible reference to diet or carbohydrate intake or pancreas / stem cell transplant	eg eat less / no sugary food or eat more fibre or go on a diet or watch what you eat ignore eat more protein do not accept reduce salt	1
Total marks			6

QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	(wholemeal bread) any two from: lower maximum / peak / less change slower rise / change need to take less insulin / less likely to hyper	no mark for identifying the type of bread but max 1 mark if not identified ignore references to rate of fall or first to peak	2
a)ii)	any four from: ☑ amylase / carbohydrase ☑ starch to sugar ☑ (sugar) absorbed / diffused / passes into blood ☑ correct reference to pancreas ☑insulin produced ☑ glucose (from blood) into cells /tissue / organ or named tissue / organ ☑ glucose used in respiration / for energy	max 3 for explaining rise max 3 for explaining fall allow starch to glucose allow once only as rise or fall allow glucose to glycogen	4
b)	any three from: advantages (compared to insulin injections): ☑ (may be) permanent / cure ☑ no / less need for self monitoring ☑no / less need for insulin /	max 2 if only advantages or only disadvantages discussed can give converse if clear that it relates to insulin injections	3

	injections <input type="checkbox"/> no / less need for dietary control disadvantages (compared to insulin injections): <input type="checkbox"/> low success rate <input type="checkbox"/> (may) still need insulin / dietary control <input type="checkbox"/> operation hazards <input type="checkbox"/> risk of infection from donor <input type="checkbox"/> rejection / need for drugs to prevent rejection	ignore reference to cost	
Total marks			9

QUESTION 6

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	pancreas		1
b)	any one from <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> (controlling / changing) diet <input type="checkbox"/> exercise <input type="checkbox"/> pancreas transplant	accept descriptions as to how diet could be changed eg eat less sugar(y foods) ignore reference to fat / protein accept example eg go for a run accept named drug eg metformin	1
c)i)	increase then fall relevant data quote (for male)	ignore reference to women max at ages 65 – 74 eg starts at 10 (per thousand) or max at 130 (per thousand) or ends at 120 (per thousand) accept a difference between any pairs of numbers in data set quoting of scale or per thousand but not 'thousands' accuracy ± 2	1 1 1
c)ii)	(between 0 and 64) more females (than males) / less males (over 65) more males (than females) / less females	ignore numbers allow eg females more diabetic than males	1 1
Total marks			8

QUESTION 7

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	insulin	extra ring drawn cancels the mark	1
b)	pancreas	extra ring drawn cancels the mark	1
c)	diabetes	extra ring drawn cancels the mark	1
Total marks			3