Question number	Answer	Notes	Marks
1	C ± GM / GM field and normal field / eq; O same species / size / mass / length / eq; R many plants / several fields / eq; M1 mass / length / surface area of leaves / count fruit / count flowers / eq; M2 <u>stated</u> time period; S1 and S2 same temp. / light intensity / carbon dioxide / water / mineral ions / soil / exposure to pests / eq;;	M1 ignore yield M2 one day plus	6

Total 6 marks

Question number	Answer	Notes	Marks
2 (a) (i)	plasmid;		1
(ii)	restriction / endonuclease; ligase;		2
(b)	C different temps / range of temps; O same species / same bacteria / mass / amount / number of bacteria; R repeat; M1 measure insulin; M2 concentration / mass / volume; S1 + S2 same pH / food / oxygen / time period / type of fermenter / sterile / eq;;	ignore light / carbon dioxide	6

(Total for Question = 9 marks)

Question number	Answer	Notes	Marks
3	restriction (enzyme); human DNA / gene / allele; ligase; use same restriction enzyme; plasmid; recombinant (DNA/plasmid); vector; insulin / factor VIII / named protein;	reject lipase	Max 5
		Total	5

Question number	Answer	Notes	Marks
4(a)(i)	none / zero / 0 / 0mg;		1
(ii)	increase / eq;		1
(b)(i)	lots of cows / group / eq;	repeat not qualified = 0	1
(ii)	1. ecies / breed / type of cow / eq; 2. a / mass / size; 3. od / grass / eq; 4. water; 5. (air temperature;	Ignore gender Ignore number in group Ignore conditions / environment	2 max
(c)(i)	denatured;	Ignore broken down / stops working / active site changes shape Reject killed	1
(ii)	1. H / hydrochloric acid; 2. enzy / protease / pepsin; 3. br kdown / digest; 4. cid) denatures growth hormone;	Mp1 Ignore low pH / acid	3

(d)	1. gene / allele / DNA <u>for growth hormone</u> ; 2. striction (endonuclease); 3. gase; 4. p smid; 5. ctor; 6. combinant;		4 max