

M1	(a) liver		1
	(b) insulin	<i>do not accept glucagon</i>	1
	(c) kidney		1
	(d) to replace water / ions / salt		1
	(that is) lost in sweat		1
			[5]

M2. (a) (i) (too) big 1

cannot fit / pass through filter / through (pores) in membrane / cannot be filtered
too big to be filtered = 2 marks 1

(ii) water 1

(iii) partially permeable 1

(b) any **two** from:

- hazards of operation / named eg
- may be rejected **or** need to use immunosuppressant drugs / long term drug use **or** transplant may need to be replaced
- susceptible to other infections
- shortage of donors
- high initial cost

2

[6]

- M3.** (a) (i) kidney 1
- (ii) bladder 1
- (iii) liver 1
- (iv) lung(s) 1
- (v) skin 1
- (b) (i) 3000
allow 2970 to 3030
correct answer gains 2 marks with or without working
if answer incorrect allow 1 mark for evidence of $1550 + 450 + 1000$ (allow tolerance of $+ \text{ or } - \frac{1}{2}$ square on each) 2
- (ii) 1600
allow 1570 to 1630 1
- (iii) 1400
allow (b)(i) – (b)(ii) 1
- (iv) correct plot from (b)(iii)
tolerance $\frac{1}{2}$ square ignore width 1

- (v) cells swell / overhydrated /
damaged
accept poisoned (by urea)

1
[11]

- M4.** (a) pancreas
allow phonetic spelling 1
- (b) (i) A 1
- shortest / quicker time (to work) 1
- (ii) D 1
- acts for longest time
mark dependent on D
allow D will last until 09.00 / breakfast / 24 hours 1
- (iii) diet / exercise
if 'diet' is qualified, then will need correct qualification, e.g.
'less carbohydrate / sugar'
accept pancreas transplant / stem cell treatment 1

[6]

M5.	(a)	(i)	water	1
		(ii)	small	1
		(iii)	3.15	1
	(b)	(i)	21 000	1
		(ii)	2 years	1
		(iii)	prevent rejection	1
				[6]

M6.(a) a higher concentration would be difficult to stir 1

(b) (i) methane 1

(ii) 60
100 - (5 + 35) but incorrect answer allow 1 mark 2

(c) (i) aerobic respiration 1

(ii) oxygen 1

[6]

- M7.** (a) pancreas
apply list principle 1
- (b) (i) protein
apply list principle 1
- (ii) any **one** from:
- (controlling / changing) diet
*accept sugar(y foods) / named eg
ignore references to starch / fat / protein / fibre*
 - exercise
accept example, eg go for a run
 - pancreas transplant
accept named drug eg metformin 1
- (c) (i) increase
ignore reference to women 1
- then fall 1
- relevant data quote (for male)
*eg max at ages 65–74 or 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
accept quotes from scale eg '130' or '130 per thousand' but
not '130 thousand'; to within accuracy of +/- 2 (per thousand)* 1
- (ii) (between 0 and 64) more females (than males) **or** less males (than

females)

ignore numbers

allow eg females more diabetic than males

1

(over 65) more males (than females) or less females (than males)

allow eg males more diabetic than females

1

[8]

- M8.** (a) brain 1
in correct order only
- blood 1
- sweat 1
- (b) (i) A 1
- (ii) to replace ions lost (in sweat)
accept salts
allow named examples, eg. prevent cramps 1
- (iii) any **one** from:
- there is too much glucose / sugar in the sports drink
 - they shouldn't have too much glucose / blood sugar
 - it would cause their blood glucose / sugar to rise (too high)

1

[6]