

# Homeostasis MS

## QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	kidney		1
a)ii)	bladder		1
a)iii)	liver		1
a)iv)	lung(s)		1
a)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 + or - ½ square on each)	2
b)ii)	1600	allow 1570 to 1630	1
b)iii)	1400	allow (b)(i) - (b)(ii)	1
b)iv)	correct plot from (b)(iii)	tolerance ½ square	1
b)v)	cells swell / overhydrated / damaged	accept poisoned (by urea)	1
Total marks			11

## QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	has the least amount of glucose  (to) transfer energy (for the run)	allow least amount of fat or no fat  allow (to) release energy (for the run) do not allow produces energy do not allow 'energy for respiration'	1  1
a)ii)	any one from: <ul style="list-style-type: none"> <li>• cells will work inefficiently</li> <li>• absorb too much water / swell / overhydrate</li> <li>• lose too much water / shrink / dehydrate</li> </ul>	ignore turgid / flaccid  cells burst is insufficient allow cramp in muscle	1
b)	any three from: <ul style="list-style-type: none"> <li>• thermoregulatory centre</li> <li>• (has temperature) receptors</li> <li>• (which) monitor blood</li> </ul>	ignore vasoconstriction / vasodilation / sweating  allow hypothalamus	3

	temperature (as it flows through the brain) •(temperature) receptors in the skin • (receptors) send impulses to the brain	impulses sent to the thermoregulatory centre = 2 marks	
c)i)	(sports drinks) contain a lot of glucose  (a person with diabetes) does not produce insulin or does not produce enough insulin  so blood glucose / sugar levels will rise too high or to a dangerous level	allow (person with diabetes) has cells which do not respond to insulin do not allow insulin produced by liver	1  1  1
c)ii)	inject insulin or have an insulin pump (fitted)		1
Total marks			10

### QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	lungs		1
a)ii)	skin		1
a)iii)	kidneys		1
b)i	(as sweat lost,) performance falls		1
b)ii)	drink water / sports drink	ignore antiperspirant	1
Total marks			5

### QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	skin		1
a)ii)	kidneys	accept kidney	1
a)iii)	lungs	accept lungs	1
b)i	multiply temperature by number of students at that temperature and add them up  divide by number of students	allow $(36.8 \times 5) + (36.9 \times 3) + (37.0 \times 6) + (37.1 \times 7) + (37.2 \times 3)$ allow 888  allow divide by 24	1  1
b)ii)	10 / ten		1
b)iii)	so enzymes work (well)	ignore death / overheating / hypothermia	1

		allow body reactions work (well)	
Total marks			7

### QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	any three from: <ul style="list-style-type: none"> <li>• water</li> <li>• ions / minerals / salts</li> <li>• temperature</li> <li>• blood sugar</li> <li>• heart rate</li> <li>• blood pressure</li> </ul>	allow breathing / oxygen / carbon dioxide  allow sodium / chloride, other ions neutral allow heat ignore urea	3
b)	contraceptive drug fertility drug		1 1
c)i)	eg nicotine, alcohol, cocaine, heroin, painkillers, tranquilisers, LSD	allow cannabis / weed or other alternative names allow tobacco ignore smoking / ecstasy	1
c)ii)	alters body chemistry or craving / needing / dependence withdrawal symptoms on stopping	allow psychological dependence  allow withdrawal described allow 'feel ill without it'	1  1
Total marks			8