

QUESTIONSHEET 1

(a)	excretion;	1
(b)	skin; kidneys;	2
(c)	(i) respiration;	1
	(ii) lungs;	1
	(iii) kidney;	1
(d)	2 of: skin; kidney; lungs;	2
		TOTAL 8

QUESTIONSHEET 2

(a)	2500 cm ³ ;	1
(b)	1550 cm ³ ;	1
(c)	$\frac{500}{2500} \times 100$; = 20%;	1 1
(d)	300 cm ³ ;	1
(e)	2 of: more water gained in drink; more water lost in sweat; less water lost in urine;	2
		TOTAL 7

QUESTIONSHEET 3

- (a) water; 1
- (b) B; 2
D;
- (c) D; 1
- (d) (i) 2 (%); 1
(ii) 4 (%); 1
- (e) A; 2
C;

TOTAL 8**QUESTIONSHEET 4**

- (a) A - kidney; 3
B - lungs;
C - skin;
- (b) 1. Organs A, B and C remove water from the body.
2. Organ A helps to control body temperature.
3. Organs B and C remove carbon dioxide from the body.
4. Urine is produced by organ A.
5. Water and salts are removed from the body by organ C.
6. Organ A produces urea.
7. Organ A removes urea and salts from the body.

4**TOTAL 7**

QUESTIONSHEET 5

(a)	(i)	digestion;	1
	(ii)	growth/replacement/repair of cells and tissues;	1
	(iii)	liver;	1
	(iv)	in the blood;	1
			TOTAL 4

QUESTIONSHEET 6

(a)	2500 cm ³ ;	1	
(b)	$\frac{1000}{2500}$; = 2/5; (allow 1 mark for correct working if answer incorrect)	2	
(c)	during exercise more heat is released therefore rate of sweating increases and more water is lost; breathing rate increases and more water lost in exhaled air;	2	
(d)	increased sweating in summer causes increased water loss through skin; less urine is produced to compensate for increased water loss through skin;	2	
			TOTAL 7

QUESTIONSHEET 7

(a)	urine;	1	
(b)	3 of: sugar in blood/none in fluid; protein in blood/none in fluid; more urea in fluid/less in blood; more salt in fluid/less in blood;	3	
(c)	urea salt;	2	
(d)	water;	1	
			TOTAL 7

QUESTIONSHEET 8

- | | |
|--|-------------------------------------|
| 1. Urine is produced by the bladder. | <input type="checkbox"/> |
| 2. During exercise the body temperature increases. | <input checked="" type="checkbox"/> |
| 3. Carbon dioxide is a waste product of respiration. | <input checked="" type="checkbox"/> |
| 4. Sweat produced by the skin helps to cool the body. | <input checked="" type="checkbox"/> |
| 5. The kidney breaks down amino acids and produces urea. | <input type="checkbox"/> |
| 6. The presence of sugar in the urine is a sign of diabetes. | <input checked="" type="checkbox"/> |
| 7. In hot weather the concentration of urine increases. | <input checked="" type="checkbox"/> |
| 8. The amount of carbon dioxide excreted by the lungs remains constant at all times. | <input type="checkbox"/> |
| 9. Homeostasis involves keeping the internal environment constant. | <input checked="" type="checkbox"/> |
| 10. In cold weather more water is lost by the skin and less by the kidneys than in warm weather. | <input type="checkbox"/> |

TOTAL 6**QUESTIONSHEET 9**

- | | |
|--|----------|
| (a) 7 correct plots
(-1 each incorrect plot) | 3 |
| (b) 50 cm ³ ; | 1 |
| (c) volume of urine increased rapidly;
from 50 cm ³ to 450 cm ³ /by 400 cm ³ ; | 2 |
| (d) 1150 cm ³ ; | 1 |
| (e) 3 hours; | 1 |

TOTAL 8

QUESTIONSHEET 10

- (a) A - kidney;
B - ureter;
C - bladder; 3
- (b) water;
urea;
salts; 3
- (c) stores urine; 1
- TOTAL 7**

QUESTIONSHEET 11

- (a) (i) 2000 cm³; 1
(ii) 2900 cm³; 1
- (b) as temperature increases, amount of water lost by the skin increases; 1
- (c) under hot conditions body sweats more;
more water is lost in sweat;
less water lost by kidneys to compensate; 3
- TOTAL 6**

QUESTIONSHEET 12

- (a) A - hair;
B - blood capillary;
C - sweat gland; 3
- (b) (i) C/sweat gland; 1
(ii) B/blood capillary; 1
- (c) (i) (take salt tablets) to replace salt lost in sweat; 1
(ii) (drink more) to replace/compensate for water lost in sweat; 1
- TOTAL 7**

QUESTIONSHEET 13

(a)	glucose;	1
(b)	$\frac{480}{500} \times 100$; = 96%;	2
(c)	(i) 30 grams;	1
	(ii) 10 grams;	1
(d)	(i) $(160 - 1.6) = 158.4$ litres;	1
	(ii) ADH;	1
(e)	(i) glucose;	1
	(ii) urea	1
		TOTAL 9

QUESTIONSHEET 14

(a)	A - blood capillaries; B - sweat gland;	2
(b)	sweat evaporates from surface of skin; evaporation takes heat from blood/body;	2
(c)	(i) vasodilation/skin arterioles widen; more blood passes to capillaries; heat from blood travels through skin;	3
	(ii) increases radiation of heat from blood to atmosphere;	1
		TOTAL 8

QUESTIONSHEET 15

- (a) A – renal artery/artery to kidney;
B – ureter; (not urethra);
C – renal vein/vein from artery; **3**
- (b) (i) same amount; **1**
less; **1**
less; **1**
- (c) 3 of:
water moves into dialysis fluid/from blood by diffusion/osmosis;
salts moves into dialysis fluid/from blood by diffusion;
urea moves into dialysis fluid/from blood by diffusion;
glucose moves equally in both directions; **3**
- TOTAL 9**

QUESTIONSHEET 16

- (a) A - glomerulus;
B - Bowman's capsule;
C - collecting duct; **3**
- (b) (i) ultra-filtration; **1**
- (ii) 2 of:
water;
urea;
salts; **2**
- (iii) glucose is reabsorbed; **1**
- (c) (i) the longer the loop of Henle, the more concentrated the urine/shorter the loop of Henle,
the more dilute the urine; **1**
- (ii) to reabsorb water/to concentrate urine; **1**
- TOTAL 9**

QUESTIONSHEET 17

- (a) (i) $2.5 / \text{cm}^3$ minute; 1
(ii) $11 / \text{cm}^3$ minute; 1
- (b) (i) causes increase in rate of urine production; 1
(ii) causes fall in rate of urine production; 1
- (c) if blood becomes dilute/if blood becomes concentrated;
less ADH secreted/more ADH secreted;
kidneys reabsorb less water and more water is excreted/kidneys reabsorb more
water and less water is excreted;
blood concentration returns to normal; 4
- TOTAL 8**

QUESTIONSHEET 18

- (a) (i) 12 - 8.5; 1
 $= 3.5 \text{ grams/dm}^3$; 1
(ii) all glucose is reabsorbed; 1
into blood; 1
- (b) (i) B; 1
glucose present in urine; 1
(ii) A; 1
proteins present in urine; 1
- TOTAL 8**

QUESTIONSHEET 19

(a)	(i)	blood vessels constrict/become narrower;	1
	(ii)	less blood flows to skin surface; less heat lost from blood to atmosphere; body temperature returns to normal;	3
(b)	(i)	2.5 arbitrary units;	1
	(ii)	increased; from 1 to 5.5/by 4.5 arbitrary units;	2
	(iii)	skin temperature falls;	1
	(iv)	evaporation of sweat; takes heat from skin; lowering body temperature.	2
			TOTAL 10

QUESTIONSHEET 20

(a)		vigorous muscular contractions; involve respiration; releases energy as heat which raises body temperature;	3
(b)		cold water causes body temperature to fall; hypothalamus senses fall in blood temperature; (hypothalamus) sends impulses to sweat glands to reduce sweating;	3
(c)		more sweat produced during exercise; more water reabsorbed by kidney to compensate for water loss through sweat;	2
(d)		less ADH released; kidneys reabsorb less water; more water in urine causing it to become more dilute;	3
			TOTAL 11