



Mark schemes

Q1.

- (a) any one from:
- movement would release (extra) heat
 - movement would increase body temperature
 - movement would increase sweating
- 1
- (b) 37.4 °C
- 1
- (c) blood is cooled at stomach / mouth
- 1
- (cooled) blood flows to the brain
- 1
- (d) via nerve(s) / neurones
or
via (nerve) impulse(s)
- ignore type of neurone allow
electrical signals allow via the
nervous system*
- 1
- (e) less sweating occurs
- allow less sweat evaporates
do not accept no sweating*
- 1
- so less heat is lost or less cooling
- allow less heat used for evaporation of
sweat / water*
- 1
- (f) dilation of blood vessels in the skin
- 1
- [8]

Q2.

- (a)
- $$\frac{1430}{2600} \times 100$$
- 1
- 55 (%)
- 1
- (b) (volume) increases
- allow (volume) goes up*

	1
(c) drink (a lot / more)	1
(d) filtration	1
reabsorption	1
excretion	1
<i>this order only</i>	1
(e) Level 2: Scientifically relevant facts, events or processes are identified and given in detail to form an accurate account.	3–4
Level 1: Facts, events or processes are identified and simply stated but their relevance is not clear.	1–2
No relevant content	0
Indicative content	
Advantages of kidney transplant	
<ul style="list-style-type: none"> • no need for regular / long hospital visits or is a long-term solution • flexible lifestyle, such as can go on holidays • may not live near a hospital or reference to transport costs • no risk of infection from frequent needles / treatment • less / no need to control diet • maintains correct concentration of substances in blood / body • cheaper long term for NHS / hospital 	
Disadvantages of kidney transplant	
<ul style="list-style-type: none"> • may be rejected • have to keep taking anti-rejection drugs or immunosuppressants • (suitable) donor may not be available or need for tissue matching • risk from surgery (e.g. anaesthesia or infection) • recovery from surgery will take a long time • does not last forever (therefore further surgery needed) 	
For Level 2, answers must refer to both advantages and disadvantages	

[11]

Q3.

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

Q4.

- (a) (i) 2400 cm³ 1
- (ii) 1400 (cm³)
allow 2 marks for ecf of correct answer to [answer given in (a)(i) – 1000]
allow 1 mark for 2400 – (600 + 400) or equivalent with no or incorrect answer
allow 1 mark for ecf of answer given in (a)(i) – 1000 or equivalent with no or incorrect answer 2
- (b) (i) sweat(ing)
allow evaporation
allow perspiration 1
- (ii) any one from:
• for cooling
• to maintain body temperature 1
- (c) (i) More water was lost through the skin. 1
- (ii) decrease 1
- [7]

Q5.

- (a) (i) The person started running a race. 1
- (ii) 2300 1
- (iii) drinking (water / sports drink) or

	through eating	1	
(b)	(i) brain	1	
	(ii) receptors	1	
(c)	cools us down		
	<i>allow evaporates</i>	1	
			[6]
Q6.			
	blood vessels supplying skin	1	
	constrict		
	<i>allow vasoconstriction</i>		
	<i>do not allow capillaries /veins constricting</i>		
	<i>do not allow moving blood vessel</i>	1	
	less blood flow (to / through capillaries / to skin)		
	<i>allow blood flows further away from skin surface</i>	1	
	so less energy is lost (to the surroundings)		
	<i>allow less heat is lost</i>	1	
	'shivering' by <u>muscle</u> (contraction)		
	<i>allow <u>muscles</u> contract (and relax) rapidly</i>	1	
	releasing energy or respiring (more)		
	<i>allow 'heat produced'</i>		
	<i>do not allow energy produced / made</i>		
	<i>do not allow energy for respiration</i>		
	<i>allow sweating stops / reduces</i>		
	<i>ignore hair erection</i>	1	
			[6]