

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**

- 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

- 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

- 1
- through eating
- (b) (i) brain 1
- (ii) receptors 1
- (c) cools us down 1
- allow evaporates*
- [6]**

Q6.

- blood vessels supplying skin 1
- constrict
- allow vasoconstriction*
- do **not** allow capillaries /veins constricting*
- do **not** allow moving blood vessel*
- 1
- less blood flow (to / through capillaries / to skin)
- allow blood flows further away from skin surface*
- 1
- so less energy is lost (to the surroundings)
- allow less heat is lost*
- 1
- 'shivering' by muscle (contraction)
- allow muscles contract (and relax) rapidly*
- 1
- releasing energy **or** respiring (more)
- allow 'heat produced'*
- do **not** allow energy produced / made*
- do **not** allow energy **for** respiration*
- allow sweating stops / reduces*
- ignore hair erection*
- 1
- [6]**