Mark schemes

(a) liver
1

(b) insulin

*do not accept glucagon*
1

(c) kidney
1

(d) to replace water / ions / salt
1

(that is) lost in sweat
1

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2

(a) (i) 2400 cm$^3$

(ii) 1400 (cm$^3$)

*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

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3

(a) (i) receptor cells
1

(ii) eye(s)

*accept retina*
1
(b) (i) any one from:
• gender / sex
• quality of eyesight
e.g. wearing glasses
• eg of factor that might affect reaction times
e.g. alcohol consumption / distractions / tiredness / health / time of day / amount of practice (at this test)
do not allow time / age

(ii) 182

allow 182.0

(iii) Any anomalies can be identified.

(iv) reaction time (too) long or reactions (too) slow

allow reaction time (too) slow

allow examples of data quoted or derived from the table, e.g. (mean)

reaction time for 90 year olds is 162 ms longer than for 75 year olds

(so) more likely to have / cause an accident

(a) (i) The person started running a race.

(ii) 2300

(iii) drinking (water / sports drink) or through eating

(b) (i) brain

(ii) receptors

(c) cools us down

allow evaporates
(a) (i) any one from:

- glucose
- oxygen
- carbon dioxide
- urea
- water

allow hormones
allow named example of a product of digestion

(ii) (cardiac) muscle

allow muscular

(b) (i) B

(ii) D atrium / atria

ignore references to left or right

E ventricle(s)

ignore references to left or right

(c) (i) a vein

(ii) an artery

(iii) keeps artery open / wider

allow ecf from part cii

(so) blood / oxygen can pass through (to the heart muscle)

(a) brain

in correct order only

blood

sweat

(b) (i) A

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(ii) to replace ions lost (in sweat)
   accept salts
   allow named examples, eg. prevent cramps

(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)

(a) (i) (37°C is the same as human) body temperature

(ii) any one from:
   • urea
   • glucose
   • sodium
   ignore water

(iii) (as they are) small enough to pass through (the membrane)
   allow because there is a high concentration in the fake blood and a low concentration in the water (so will diffuse across)

(iv) glucose

(b) any two from:
   • don’t have to go to hospital or done at home rather than hospital
   • less effect on lifestyle / can be mobile
   • always filtering urea out
   continuous is insufficient
   • don’t need a medical professional (to do it for you)
   allow takes a shorter time
   allow does not have to be connected to blood vessels
   ignore ‘less painful’

(a) pancreas
   apply list principle

(b) (i) protein
   apply list principle
(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

(c) (i) increase

  ignore reference to women

  then fall

  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)

(ii) (between 0 and 64) more females (than males) or less males (than females)

  ignore numbers
  allow eg females more diabetic than males

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

  allow eg males more diabetic than females

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