

(Control of water balance (kidneys, ADH, dialysis, transplants))

Q1.a)(2018)

2400 **and** 2280

or

500 **and** 380

120

Q1.b)(2018)

respiration of glucose

Q1.c)(2018)

(more) sweating

(because) exercise releases
heat

or

need to cool the body

or

need to lose heat

or

need to maintain body
temperature

Q1.d)(2018)

more energy needed

(so) more (aerobic) respiration

(so) increased breathing (rate /
depth) (to supply oxygen **or**
remove carbon dioxide / water)

Q2.(2019)

protein

Q3.(2019)

urea is a waste (product)

Q4.(2019)

least

medium

most

Q5.a)(2019)

diffusion

Q5.b)(2019)

protein

(molecules too) large

Q6.a)(2019)

3

Q6.b)(2019)

increases

Q6.c)(2019)

any **two** from:

- has a low(er) concentration of urea
- constant urea concentration / level
- less time attached to machine **or** fewer hospital visits
- no / less restriction on travel
- not piercing skin repeatedly
- less chance of infection / blood clots
- cheaper in the long term
- no restrictions on diet

Q7.a)(2020)

$$\frac{1430}{2600} \times 100$$

55 (%)

Q7.b)(2020)

(volume) increases

Q7.c)(2020)

drink (a lot / more)

Q7.d)(2020)

filtration

reabsorption

excretion

Q8.(2020)

Advantages of kidney transplant

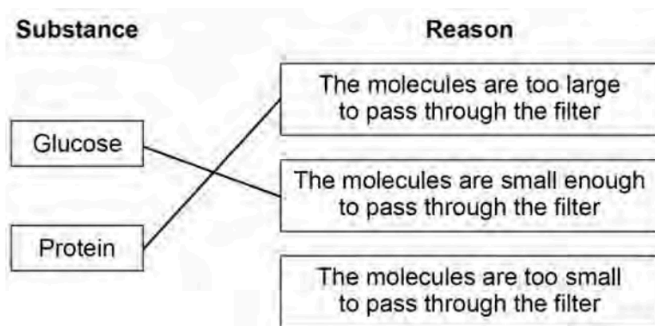
- no need for regular / long hospital visits **or** is a long-term solution
- flexible lifestyle, such as can go on holidays
- may not live near a hospital **or** reference to transport costs
- no risk of infection from frequent needles / treatment
- less / no need to control diet
- maintains correct 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

Q9.(2023)



Q10.(2023)

158.1 (dm³)

Q11.(2023)

points for transplant:

- transplant is cheaper
- numerical comparison, eg £18 000 cheaper in first year and £30 000 cheaper in subsequent years
- less / no inconvenience, eg time **or** cost for hospital visits
- less / no restriction on lifestyle
- less / no restriction on diet or fluid intake
- no danger of infection from eg puncturing skin or blood in contact with machine
- less / no possibility of blood clots
- no need to take anti-clotting drugs
- transplanted kidney keeps water / urea / ions in blood at correct level at all times
- feel well all the time

points against transplant:

- danger of rejection
- need tissue match for transplant
- donors in short supply
- possibility of organ damage due to anaesthetic
- possibility of infection in surgery
- possibility of damage due to surgery
- need to take immunosuppressant drugs
- may suffer other infections due to suppressed immune system
- may need repeat operation (after about 10 years)

For **Level 3** students should refer to both points for and points against.

Q12.(2023)

$$4 \times 5\,000 = 20\,000$$

$$20\,000 + 17\,000$$

$$(\text{£})\,37\,000$$