AQA GCSE BIOLOGY (HIGHER) · 8461

BIOLOGY



MARK SCHEME

4.5.3 HORMONAL COORDINATION IN HUMANS (PACK 5)

SCORE	PERCENTAGE
/81	%

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Q1.

(a) increases

gains 1 mark

but

70 × more (concentrated)

gains 2 marks

2

(b) *idea that*

water is reabsorbed;

urea is not reabsorbed (as much)

each for 1 mark

(credit (much) more water reabsorbed than urea)

gains 2 marks

2

[4]

Q2.

(a) A > B > C;

A + B + C = 2 800;

one number correct

two numbers correct

each for 1 mark

4

(b) urine;

less produced;

kidneys absorb more water

or

to maintain (water) balance

each for 1 mark

3

[7]

Q3.

(a) LH or FSH (only one mentioned)

gains 1 mark

but

LH and/or FSH (both mentioned)

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gains 2 marks

rises (sharply)

for 1 further mark

3

(b) FSH or LH level kept low
no ovulation/egg not released

for 1 mark each

2

(c) for:
very effective/prescribed/
personal preference/convenient/
promote family values

any two for 1mark each

against:
upset internal environment
named side effects (allow two)
religious belief
no protection against VD/AIDS
long-term effects
moral belief

any two for 1 mark each

4

[9]

Q4.

(a) *idea:*
filtered

for 1 mark

reabsorbed

gains 1 mark

but
all reabsorbed

gains 2 marks

correct reference to blood

for 1 mark

4

(b) (i) *evidence of* $\frac{170 - 1.5}{170} \times 100$

gains 1 mark

but
99(.1)(%)

gains 2 marks

2

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(ii) *idea:*
more urine
for 1 mark

body dries out/dehydrates
or
needs to drink more
for 1 mark

2

(c) no effect for first half hour/until 1 hour
rises to 210cm^3/to 3x level after 1 hour
rises to 280cm^3/to 4x level after 1½ hour
reference to 280cm^3/1½ hour as maximum level
falls to (near) normal after 2½ hours
comparison of rates of change e.g. rapid then slower rise and/or steady fall
not all of 800cm^3 excreted (extra to normal)
each for 1 mark to max. of 5
(do not credit simply rises then falls)

5

[13]

Q5.

idea:
glucose level rises
pancreas releases insulin
glucose → glycogen (in liver)/removes xs glucose
glucose level falls/returns to normal
for 1 mark each

[4]

Q6.

- cost of dialysis and transplant <u>compared</u>

- *idea that* both expensive and may need to balance cost against other medical priorities
- restricted diet/movement with dialysis

and

- no restriction/independence for transplant

each for 1 mark

- *idea* that donated kidney may not be available
- transplant may be rejected/dialysis consistently reliable

[Credit problem of finding body access points for repeated dialysis over the long term]

[5]

Q7.

(a) (i) asexual / non-sexual / cloning *[not artificial]*
for 1 mark

1

(ii) gene / allele / chromosome / DNA

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for 1 mark

1

(iii) A) same / look alike / similar

gains 1 mark

but same sex / all female / all black / identical / clones

gains 2 marks

B) same as the black (female)

for 1 mark

3

(b) (i) ovaries [not reproductive organs]

for 1 mark

1

(ii) hormones / fertility drugs / FSH

for 1 mark

Allow LH

[Do not allow oestrogen / fertility treatment]

1

[7]

Q8.

(a) sweat – 6 squares high
urine – 15 squares high

each to < half a square for 1 mark each

2

(b) for *hot day (assumed unless otherwise stated)*

- same in breath
- same total
- more in sweat* / sweats more
- less in urine* / urinates less
- correct quantification of either * eg **x**cm^3 more / less or **n** times more / less
  250 cm^3 more sweat 6 × more sweat
  250 cm^3 less urine ¼ / 25% less urine
  any four • for 1 mark each
  [Do not allow just figures quoted from the table]

4

(c) *ideas that*

- you sweat more **<u>to keep cool</u>** on a hot day
- urine adjusted (by kidneys) to keep balance / to keep same total loss

each for 1 mark

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[Accept "more sweat therefore less urine"]
[Credit ideas from (c) if given in (b)]

2

[8]

Q9.

(a) breath same + sweat more* + urine less* (*All <u>three</u> needed)*
<u>or</u>
total same but split differently

for 1 mark

**x* either change correctly quantified eg*
x cm^3 more/less or **n** times more/less

for 1 further mark

sweat 250 more	6 x more
urine 250 less	¼/25%less

2

(b) *ideas that*

- you sweat (more) <u>to keep cool</u> on a hot day
- urine adjusted (by kidneys) to keep balance / to keep same total loss

each for 1 mark

(NB credit these answers if in (a) candidates have answered more fully than expected)

2

(c) *ideas that*

- when blood water normal/100% / steady kidney re-absorbs water at low/steady rate
- when blood water percentage falls, the rate at which kidney re-absorbs water rises
- when blood water percentage rises again, is high/normal the rate at which
  kidney re-absorbs water falls
- 97 / 97.5% / 98% (of normal) blood water is the point at which the kidney's reabsorption rate starts to increase / decrease

each for 1 mark

[allow idea that there is delay between blood water percentage changing and rate of re-absorption changing]

4

(d) *any reference to* hormone(s) / pituitary (gland)

gains 1 mark

<u>but</u>
ADH <u>or</u> hormone(s) from pituitary (gland)

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gains 2 marks
(do <u>not</u> allow 'brain)

2

[10]

Q10.

(a) 1

for 1 mark

1

(b) skin
kidneys

for 1 mark each

2

(c) (i) *idea that*
there will be less / no sodium (per day) (in her urine)

for 1 mark

1

(ii) *idea that*
she should take in more sodium (chloride) / salt
(*allow* stay indoors / in shade **or** be less active)

for 1 mark

1

[5]

Q11.

oestrogen produced

gains 1 mark

but N.B. sequence important here
oestrogen produced by ovary

gains 2 marks

LH produced

gains 1 mark

but
LH produced by pituitary

gains 2 marks

LH causes egg release

for1 mark

[4]

Q12.

(a) 1

for 1 mark

1

(b) (i) there will be less / no sodium (per day) (in her urine)

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for 1 mark

1

(ii) *idea that*
she should take in more (sodium (chloride) / salt)
(*allow* stay indoors / in shade **or** be less active)
for 1 mark

1

(c) active transport / uptake
(*do not allow* diffusion / osmosis)
the concentration / gradient
for 1 mark each

2

[5]

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